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## ANTITOXIN TREATMENT OF PNEUMONIA.[1]

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It is extremely probable that the pneumonic process, as we see it from the moment of invasion to the crisis, implies infection by the agency of a continually changing set of microbes. Welch has shown that the virulence of the coccus is inversely as its age, the organisms taken from the centre of a pneumonic focus having very little potency, while on the edge of a patch which is still spreading they are most active. The inference to be drawn from this, and which is also supported by the behavior of artificial cultures, is that the infection of the system is not maintained through the whole period of pyrexia by the same microbes, but by a constant succession of cocci, the older ones becoming inert, and fresh ones carrying on the work of supplying the toxin. This supply fails soon after the local process has ceased to spread, simply because there are no longer any young bacilli to maintain it. But while it would seem as if this might afford a sufficient explanation of the phenomena of defervescence by crisis, yet the observations of the Klemperers and of subsequent investigators make it reasonably certain that there is an antitoxin produced that has its share in the result. We are apt to think of the process of absorption by which resolution is ultimately effected as beginning *after* the crisis, whereas it is in operation from the first moment of the disease, as is shown by the early infection of the general system which it brings about. Up to the point of consolidation the rate of deposition is far greater than that of removal, and

[1] Read before the Association of American Physicians, May 5, 1898.

a rapid accumulation of exudate takes place in the air-cells. This exudate, however, is not permanent in constitution. It immediately begins a process of change, and, as we have seen, the organisms contained in it change their properties also. As time goes on there comes a period when the deposition of fresh infective material is less active than the absorption of that which is older. At this point an antitoxic effect becomes apparent, and in the cases terminating by crisis a rapid fall of temperature takes place. In the cases terminating by lysis, either the deposition of fresh material is protracted by the invasion of new territory or the absorption of the older material is for some reason less active.

As early as 1888 Netter rendered mice and rabbits immune to pneumonia by injecting them with fluid prepared from the dried spleens of infected animals. Subsequently he employed an old pleuritic exudate containing pneumococci, and at last the sputum of a pneumonic patient which had ceased to be virulent after the crisis.[1]

Pursuing this line of investigation, Foa found that the injection of an attenuated culture of the diplococcus of pneumonia into an animal gave immunity against the disease for several months. He produced the injection serum by precipitating with ammonium sulphate the culture broth containing the diplococci, and filtering repeatedly. The filtrate was injected into the veins of rabbits daily for three or four days. Again, he made an extract of the muscles and viscera of a rabbit dead from pneumonia, precipitated it in the same way, and got the same immunity. The extract from a healthy rabbit when injected gave no immunity.

He then studied the immune animal, drawing the blood and taking the serum after coagulation to inject another animal, which also became immune. As a control experiment, he injected a rabbit with blood of a man dead of pneumonia; death resulted. He states that several species of virus are formed, one seeming to act on the nervous system, another on the blood and tissues.

The Klemperer brothers verified these results.[2] Their report is briefly as follows: Two rabbits were injected, each with 20 c.c. of pleuritic exudate taken from a pneumonic patient and which by culture was shown to be free from living bacteria. Fourteen days later both were inoculated with a virulent culture. Both survived, while the control animal died. Later, they immunized animals with pneumonic sputum taken before the crisis and heated so as to destroy the poison. The same result was obtained by heating to 60° C. a glycerin extract of pneumococci. The bacteria were washed from agar culture with sterilized

[1] Centralblatt für klinische Med., 1888, ix. No. 15.
[2] Berliner klin. Woch., August 24 and 31, 1891.

glycerin, which was exposed to heat for one or two hours and filtered repeatedly. They found that immunity resulted from doses proportioned in quantity to the strength of the preparation. It was employed subcutaneously.

They found further that dogs can be immunized against pneumonia, and can also be cured of the disease. This cure takes place through the serum of immune animals immunized by taking in the products of the activity of the pneumococcus. This immunizing serum does not cure by killing the cocci in the system, for after four days' contact with the serum the bacteria injected into an animal caused death. In fact, the bacteria in contact with this serum increase in number. At the same time the serum, if injected, prevents the formation of the poison in the body of the animal. This may be explained in one of two ways: either the serum hinders their power of forming poison, or the cocci go on forming poison, and the serum counteracts its effects, or through chemical changes renders it inert. At any rate, the cocci become harmless to the animal, their evil influence being destroyed by the reaction of the body cells, especially the white blood-corpuscles. If pneumotoxin and curative serum be mixed and injected into an animal, there is no rise of temperature and no effect from the poison, while toxin alone kills the animal, with symptoms of septicæmia.

They next inquire whether the pneumonia cured in animals by the serum is identical with pneumonia in man. Their autopsies on animals dead of pneumotoxin injections did not show the fibrinous exudation in the lungs characteristic of pneumonia, but diplococci were found in the blood. However, it is not the pneumococci themselves, but the poison that they produce, that gives the septicæmic symptoms. This poison, when formed at the seat of injection, reaches the blood sooner than the cocci themselves. Also, if we filter out the cocci, the poison remaining in solution kills the animal injected as effectually as the original culture.

In contradistinction to animals, man is only slightly susceptible to the pneumoccocus. Living cocci can exist on healthy mucous membranes without doing harm, and are found in the sputum of healthy men. If we inject men subcutaneously, what results do we get? The Klemperers experimented by injecting themselves, and found that no reaction resulted from small amounts; from larger ones a local swelling, with rise of temperature and febrile symptoms, resulted, passing away in a few days. Hence, they conclude that men are much less susceptible than dogs to the same relative doses.

They conclude that in man it is not the exudation in the lung that renders the disease so grave, but the general infection from absorption of the bacterial poisons in the exudate into the circulation, acting on the heart and vital centres, and producing febrile symptoms. In ani-

mals injected, the poison enters the blood stream directly and produces fever at once. The poison increases for some days and then the antitoxin is produced, and immunity results. Serum taken from pneumonic patients after the crisis is found to cure pneumonia in dogs. They conclude that from pneumotoxin in man is produced antitoxin at the time of the crisis, and this counteracts the effects of the toxins. Thus the so-called crisis in man is the beginning of the formation of the antitoxin, and though the cocci remain for some time in the blood, they are no longer harmful.[1]

They then question whether immunity in man results after the crisis, and conclude from researches and experiments that it does occur, but is only temporary.

With regard to the treatment of pneumonia, they say at present we use supportive measures, awaiting the formation of antitoxin. But the aged and the weak succumb. They suggest that, by using the immunizing serum from animals, we may hasten this process and save lives. They have treated some cases in this way with apparent benefit, as shown by fall of temperature and slowing of pulse and respiration. But a sufficient number have not as yet been treated to arrive at a definite and final conclusion as to the value of the treatment.

An important discussion on this subject took place at the Academy of Medicine in Turin, December 2, 1892.[2]

Lara, chief physician of the Hospital San Giovanni, reported the results of ten cases of pneumonia under serum-treatment. Five of these cases were double, five single. Eight of the patients were young persons, two advanced in years; six were robust, four of debilitated habit. The serum was in some cases from immunized rabbits, in other cases from dogs, and in still other cases a glycerin extract was employed made from the viscera of refractory animals. In no case was there any local reaction. The glycerin extract produced no observable general symptoms. Serum from dogs caused nervous excitement; that from rabbits produced general agitation and a temporary aggravation of the disease.

In all but three cases there was reduction of temperature, not sudden, but after an interval.

A change in the character of the pulse was observed, without a reduction in the number of beats.

There was no immediate change in the respiration, but, after a time, it became somewhat slower.

The crisis took place in from three to five days. The convalescence was rapid and complete; complications were rare and of little gravity. The reporter considered the results encouraging.

[1] This statement is not in accord with more recent observations which show that cases in which cocci are found in the blood generally prove fatal.

[2] Journal de Médecine, 1893.

Bozzolo reported five cases treated with serum from rabbits, prepared by a special process not described. There was rapid fall of temperature in every instance. Four of the patients recovered, and one died after defervescence. The kidneys were unaffected.

De Renzi reported that during the past year he had treated ten cases of pneumonia with anti-pneumococcic serum, prepared as follows:

The animals are inoculated with a non-lethal quantity of pneumonia virus, the dose of which is gradually increased until a strong immunity is produced. Serum from these animals is injected into the patient. Only severe cases were selected for treatment. In every case a cure resulted. In one case the temperature came down on the third day, although there were signs of diffuse hepatization. Of five other cases admitted during the year, and not treated with serum, one died. Although the author admits that his cases might have recovered without the serum-treatment, he considers his results decidedly encouraging, as pointing to a real and efficient treatment of pneumonia.[1]

Wiesbecker[2] reports five cases of pneumonia treated with injections of serum obtained from patients recovering from the disease. While there was no uniformity in the results, as far as the objective signs were concerned, these becoming more and more severe in some cases after the injection, while in others the severity abated, there was in every instance a most remarkable improvement in the subjective conditions. This improvement was almost instantaneous, in one case being manifest within one and one-half minutes after the injection. But for one instance, in which the patient was a child only three years of age, we should be inclined to refer these marvellous results to suggestion, especially as they did not conform to the physical conditions present at the moment. Difficulty of breathing, pleuritic pain, malaise of every description disappeared as if by magic; recovery took place in every case, though not always with remarkable promptness. The quantity of serum in each case was 10 c.c.

Similar to this was the experience of Fourriere,[3] in a single case treated by injections of goat's blood. The patient, a person past middle age, was recalled to life from an unconscious, fairly moribund condition, and, though death occurred after several days, there was an interval during which danger seemed to be over and recovery assured.

In 1897 Washbourne, of Guy's Hospital, published his researches on anti-pneumococcic serum. His method was essentially that employed in producing diphtheria antitoxin. A pony was the animal selected, and after nine months' treatment, first with living and then with dead cultivations, the serum was found to possess marked protective powers.

[1] British Medical and Surgical Journal, March 28, 1896.
[2] Zeitschr. f. klin. Med., 1897, xxxii. p. 188.
[3] Journal de Médecine, January 1, 1893.

By using a special method of cultivation it was found possible to maintain the virulence of the pneumococcus at a given level for a period of sixty-six days. This process is described in detail in the *Journal of Pathology and Bacteriology* for January, 1898. To maintain the virulence of this culture it must be kept in an incubator at a temperature of 37.5° C. He claims that under these conditions the anti-pneumotoxin can be accurately standardized.[1]

Several cases of pneumonia have been treated by Washbourne and others with this serum. While its influence cannot be distinctly traced, it can fairly be considered to have contributed to the favorable result in some extremely unpromising cases.

We cannot avoid the conclusion, from this résumé of the achievements of serotherapy in its application to pneumonia, that up to the present time they can scarcely be said to amount to more than an encouragement to further effort. No really decisive results have been obtained.

In some cases the effect seems to have been favorable; but, in view of the variable course of pneumonia under all forms of treatment, it is impossible to assign to the injections any positive share in the result. It can be only by the accumulation of a large number of observations that a conclusion as to the value of the treatment can be arrived at, and, unfortunately, the difficulties in the way of extended observations are such as to deter most investigators from pursuing the subject.

The first difficulty is found in the short life of the pneumococcus and its feeble power of resistance. Cocci that are virulent at the beginning of an investigation cease to be so as the investigation proceeds. On the other hand, toxins that are expected to produce only a moderate reaction when injected, sometimes display an unlooked-for virulence. Animals apparently progressing normally toward immunity most unexpectedly succumb to septicæmia from a dose of toxin supposed to be entirely within the limits of safety. Again, animals that were readily immunized at first, lose their immunity in spite of renewed inoculations, and the serum obtained from them ceases to be reliable. This variation in the conditions under which experimentation is conducted is liable to vitiate the most carefully-drawn conclusions. If this be true under the favorable circumstances of the laboratory, what must it be in the exigencies of ordinary practice? If before employing a therapeutic agent we must resort each time to experiment to test the value of the specimen in hand, the usefulness of the agent will be very limited.

It is to be hoped that this difficulty has been overcome by Washbourne's method, already mentioned, and that it will be possible in the future to command a supply of reliable antitoxin for the treatment of

[1] British Medical Journal, 1897.

pneumonia, as we already do for the treatment of diphtheria. Efforts to produce such a supply are now being made by the Health Board of New York. Should they be successful the value of the method will soon be determined.

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## PRIMARY MALIGNANT DISEASE OF THE SUPRARENAL BODIES.

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A GREAT deal of attention has recently been paid to the nature and origin of suprarenal tumors, and especially of growths derived from outlying bits of the organ, accessory suprarenal bodies, or suprarenal "rests." These latter tumors, which are composed of suprarenal tissue, but are not of the suprarenal body proper, have aroused much interest, because they illustrate so aptly Cohnheim's theory of the origin of tumors from fœtal inclusion, and because when the suprarenal rest is embedded in the substance of the kidney they give rise to a proportion, probably by no means large, of renal growths.[1] But, clinically, the latter cases are, of course, indistinguishable from renal tumors.

Tumors arising in the suprarenal bodies themselves are so near the kidney that they often resemble them clinically, and may easily be mistaken for them. In this paper we propose to record a case of primary malignant suprarenal growth presenting some special points of interest, and to offer some remarks on the general symptomatology and pathology of such cases. For this purpose we append brief notes of five other cases from St. George's Hospital (Table I.) which we have examined microscopically, and of twenty other cases, fourteen of which (Table II.) are collected from literature. And here we would express our indebtedness for references to the papers of Drs. Affleck and Leith in the *Edinburgh Hospital Reports* (vol. iv.), and of Dr. Kelynack, in the *Medical Chronicle* for September, 1897. We have, however, only referred to fourteen cases in literature, which are, we believe, undoubted cases of primary malignant disease of the suprarenal bodies. We have accepted only those which appeared to be certainly primary, and in which the malignant character was shown either by secondary growths or the invasion of adjacent parts. We have, therefore, omitted a number

[1] Vide Targett (Trans. Path. Soc. London, 1896, vol. xlvii. p. 126), who believes that the frequency of this class of tumors has been much exaggerated by some writers.

of cases which, though described, and very possibly quite accurately, as sarcoma, do not conform to the conditions we have laid down.

The notes of six other cases (Table III.), not previously published, have been obtained from various sources, and we beg to thank Drs. S. Fenwick, Sansom, Penrose, and Still, W. T. Brooks and Mallam, and Mr. Targett for their kind courtesy.

Of the six cases from St. George's, including the present one, two have been previously published by Dr. J. W. Ogle and by Dr. Lee Dickinson, respectively, in the Pathological Society of London's *Transactions;* but, as we have had the opportunity of examining them histologically, they are included together with our other cases in Table I.

Case I.—The patient was a man, aged fifty years, admitted to St. George's Hospital July 2, 1897.

The *past* history was uneventful; he had never had syphilis or rheumatic fever, and generally had enjoyed good health.

The *present* illness began two months ago with pain in the lower part of the abdomen extending round to the back at the level of the spine of the scapula; for the first week it was intermittent, but since then had been continuous. It had no relation to food, but was worse at night and on lying down, and was relieved on stooping. There had been no vomiting; the bowels were confined; he had passed slime three or four times, and the motion had been noticed to be tarry. Difficulty and pain on micturition had existed for three weeks, and had been accompanied by frequent nocturnal calls to pass water. There had never been any hæmaturia. Defecation was also painful. Had lost three stone in weight in the last two months.

*Present state.* A pale man, with an anxious expression, bad appetite, and a pulse of 112, artery thickened. The urine was normal.

The heart was natural and, except for a few crackles on the left axilla, the lungs were normal.

Over the fourth and fifth dorsal vertebræ there were tenderness and considerable stiffness, which, however, soon passed away.

The abdomen moved on respiration, was retracted, with resistance of the muscles, and at first nothing abnormal except slight splenic enlargement was found. Two weeks after admission pulsation and a systolic murmur were noticed to the left of the middle line between the umbilicus and the left hypochondrium, but no tumor could be made out. The murmur could not be heard behind. With rest in bed the patient improved considerably, the physical signs became rather less marked, and on August 19th he went to a convalescent home, the probable diagnosis being abdominal aneurism.

He was readmitted to the hospital on September 7, 1897, in much the same condition as in July, with constipation, pain in the abdomen and back, and difficulty in micturition. He had lost seven pounds in weight while in the convalescent home.

The abdomen was somewhat distended, and seemed to contain some ascitic fluid. It was excessively tender all over, particularly just to the left of the epigastrium; in this situation the note on percussion was dull, and there was obscure pulsation; no tumor could be felt, and

at first no bruit was heard in this situation. The physical signs were in fact less marked than during his previous stay in the hospital.

Ten days after admission a bruit was heard at the junction of the epigastric, umbilical, and left hypochondriac regions; but no tumor or dulness was detected, though obscure pulsation was felt. The ascites had increased, and there was some œdema of the feet. On September 20th he brought up three-quarters of a pint of blood from the stomach and passed blood per rectum; this left the patient somewhat blanched; the area in the abdomen over which pulsation could be felt and the systolic bruit could be heard had considerably increased, and, in addition, the second sound of the heart was heard, but no tumor could be made out.

On September 22d hæmetemesis and melæna came on again, and he died collapsed.

For the last eight days the temperature had been raised to 100° F., with a few intermissions, without any apparent reason. While in the hospital he was first under the care of Dr. Cavafy, and on the second occasion under Dr. Ewart, to whose kindness we are indebted for permission to publish the case. We are also indebted to Dr. W. J. Fenton for the clinical history.

*Autopsy.* The body was very anæmic and much emaciated. There was no jaundice or pigmentation.

The lungs were emphysematous, but contained no new growth. The pericardium and heart were healthy.

The peritoneal cavity contained a small amount of turbid fluid, without there being signs of acute inflammation. Nodules of soft, reddish growths about the size of cherries were scattered over the parietal peritoneum of the pelvis and posterior abdominal wall. The great omentum, which was almost devoid of fat, also contained secondary growths; the mesenteric glands were enlarged and infiltrated with new growth.

The stomach and intestines contained recent blood-clot. The stomach had a ragged opening on its posterior wall near the cardia, two and one-half inches in diameter, which opened into a cyst, the walls of which were formed of soft, reddish new growth.

The growth had broken down in the centre, and so given rise to the central cavity, which opened freely into the stomach. The growth appeared to have started from the inside, probably from the medulla of the left suprarenal capsule, a small piece of which was found in direct continuity with the growth. The tumor had then grown toward the middle line and had invaded the pancreas and the posterior surface of the stomach. The naked-eye characters of the growth were so like suprarenal tumors, and so unlike any pancreatic new growth, that we have no hesitation in considering that it originated on the left suprarenal capsule.

On the floor of the cavity inside the new growth the splenic artery was found eroded and opening freely into the cavity formed by necrosis.

For the drawing, which shows the relation of the stomach and new growth, we are much indebted to Mr. E. Wilson, B.A. Cantab.

The right suprarenal body was quite healthy.

The spleen weighed nine ounces, and was healthy, as were the kidneys. The liver weighed sixty-four ounces and contained numerous nodules of growth; some were as large as a walnut. Those on the surface were softened and umbilicated.

The spine and ribs were normal.

*Microscopic examination of the suprarenal tumor in Case I.* Numerous parts of the wall of the cystic tumor, as well as pieces of secondary growths, were examined, after being prepared by the paraffin method.

The microscopic appearances are those of an epithelial growth arranged on an alveolar pattern. (Fig. 1.)

FIG. 1.

Spheroidal-celled carcinoma of suprarenal body from Case I. × 100.

The cells are large and of the epithelial type, and usually spheroidal, but in places seem to have run together to form plasmodion masses or large multinuclear cells. In additon, there are scattered patches, both among the epthelial cells and in the interstitial fibrous tissue, of small round cells. The intervening fibrous tissue is in parts well formed, in other parts it is somewhat loose.

In some parts again there are tracts of epithelial cells that have undergone necrosis and do not stain ; here, again, there is some small-cell infiltration, and occasional hemorrhages are seen.

While bearing in mind the appearances that a sarcoma invading fibrous tissue may produce, it appears to us that this tumor belongs to the carcinoma class, as is shown by the epithelial character of the cells and their alveolar arrangement. The small-cell infiltration is probably due to the inflammatory changes which are bound up with the necrotic

destruction of the tumor. The evidence of the necrosis and hemorrhages which, in combination, have transformed a large part of the tumor into a pseudo-cyst has been already referred to.

Remarks. The special interest attaching to this individual case is that the symptoms and signs pointed to the diagnosis of a diffuse aneurism in connection with the commencement of the abdominal aorta. Some five and a half years ago one of us examined post mortem a man, aged twenty years, with a large diffuse aneurism arising from the upper part of the abdominal aorta and occupying the left pleura, under Dr. W. H. Dickinson's care in St. George's Hospital. The general aspect of the two cases was not unlike, and there was so little pulsation in the latter that, although aneurism was correctly diagnosticated, the question of caries of the spine with a large abscess was very seriously considered. We are indebted to Dr. S. Fenwick for the notes of a case of his in the London Hospital (No. 22) in which the pulsation of a vascular suprarenal growth, though not expansile, simulated an abdominal aneurism. In the present case the hæmatemesis and melæna, which eventually proved fatal, suggested that an aneurism had burst into the alimentary canal. The communication of an adrenal growth with the stomach appears to be unique, but reference may appropriately be made to a case of Dr. Hale White's,[1] in which carcinoma of the pancreas, arising in what is a very exceptional position, namely, the body of the gland, and not invading the head, spread to and perforated the stomach, giving rise to fatal hemorrhage.

Hemorrhage from the stomach, however, occurred in the case recorded by Affleck and Leith,[2] but was due to a gastric ulcer. It is also conceivable that a growth in the right suprarenal capsule might so interfere with the portal vein as to lead to great venous engorgement of the stomach, and so to venous oozing and hæmatemesis; but as far as we know there is no case to support this hypothesis (vide Case 21).

It is noteworthy that in this, as in nearly all the previously recorded cases, there was no resemblance to Addison's disease.

Other points of interest in the case will be referred to in the discussion of the clinical and pathological features of primary malignant tumors of the suprarenal bodies.

General Remarks on Primary Malignant Suprarenal Growths. *Frequency.* Affleck and Leith[3] collected twenty cases of primary sarcoma, and Kelynack,[4] in a valuable critical paper on adrenal growths, only admits one case of undoubted carcinoma. Many more cases are recorded as cancer, sarcoma, or carcinoma; but some of these are undoubtedly secondary to disease elsewhere, while

[1] Hale White. International Clinics, series 1896-97, vol. iv. p. 85.
[2] Edinburgh Hospital Reports, vol. iv. p. 278. [3] Affleck and Leith. Loc. cit.
[4] Kelynack. Medical Chronicle, 1897, new series, No. 6, vol. vii. p. 401.

others are almost certainly examples not of malignant disease, but of adenoma. The relation between adenoma and malignant disease of the suprarenal bodies will be referred to later. In order to be quite certain that we are dealing with cases of undoubted malignant disease, we have only included cases where there were secondary growths or invasion of adjacent parts. It is probable that genuine cases of primary malignant disease have been excluded by drawing this hard-and-fast and, perhaps, artificial line; but this seems the only certain way of avoiding the inclusion of vascular or hemorrhagic adenomata. Pilliet's[1] case, in which there were extensive thrombosis of the inferior vena cava and œdema of the legs, was apparently a true sarcoma; but, as there were no secondary growths, we have not included it among our cases.

In Lazarus's[2] case of a child, aged three and a half years and weighing thirty-seven pounds, the left suprarenal formed a tumor weighing twelve pounds, and was a sarcoma; but since no mention of a second growth is made, we have felt obliged to omit it. Much the same may be said about other cases.

Cohn[3] refers to Mankiewicz's thesis (Strasburg, 1887), in which a round-celled sarcoma in a child, aged two years, is described, but we have not been able to see the original thesis to find out whether there were any secondary growths.

Primary malignant disease of the suprarenal bodies is distinctly rare; we have collected twenty-six cases in all from literature, from the London hospitals and museums, and from various private sources. Mr. C. F. Beadles has kindly informed us that in 4800 autopsies at Colony Hatch there was no undoubted case of the kind.

*Sex.* The incidence of the disease is evenly distributed between the two sexes. Of our twenty-six cases there were thirteen males and thirteen females.

Of the thirteen males three were carcinomatous and eight sarcomatous, the nature of two cases being undetermined, while there were six cases of carcinoma and seven of sarcoma in women.

*Age.* In our twenty-six cases the average age was thirty-seven and a half years; in Affleck's and Leith's twenty cases of primary sarcoma of the suprarenal bodies the average age was higher, forty-five years.

The extremes in our cases were nine months and seventy-three years, both in females; four cases, all of them females, were under four years of age. The extremes among the male cases were twenty-five and sixty-two, the average being forty-five and five-tenths years. The

[1] Pilliet. Bull. Anat. Soc. Paris, 1888, p. 716.

[2] Medical Press and Circular, 1894, vol. i. p. 457; and Berlin. klin. Wochenschrift, May 21, 1894.

[3] Cohn, M. Berlin. klin. Wochenschrift, March, 1894.

average age of the thirteen female cases was only thirty-one and two-tenths years, being pulled down by the occurrence of four cases under four years of age.

R. Williams[1] mentions that in thirty-six cases of primary malignant disease of the suprarenal bodies collected from literature a third were in children. Our figures differ somewhat from his, but, as has been pointed out, we have not accepted as sarcoma or carcinoma all the cases that have been thus described.

The average age of the nine cases of carcinoma was forty-four and one-tenth years, being fifty and six tenths years for the three males and forty and eight-tenths for the six females.

The average age of the eighteen cases of sarcoma was thirty-two and three-tenths years, being thirty-nine and nine-tenths years for the eight males and twenty-three and six-tenths for the seven females.

Thus sarcoma, as is generally the rule, occurs at an earlier age than carcinoma, and the female sex is attacked earlier than the male.

*Morbid anatomy.* To the naked eye primary malignant suprarenal tumors conform pretty uniformly to one type, being vascular, soft, rapidly-growing, and having a marked tendency to undergo fatty degeneration, necrosis, and softening in their interior, with the formation of a central cavity which contains a mass of blood-stained and degenerated growth. Probably for this reason they have been sometimes called cystic sarcomata.

A similar softening may occur in undoubted adenomata arising from the cortex, and Letulle[2] has described, under the name of diffuse fatty adenomata arising from the cortex, tumors which have a very close resemblance to malignant tumors, but differ from them in not infiltrating the surrounding tissues or producing secondary growths.

Since it is almost impossible to differentiate between the histological appearances of an adenoma disorganized by hemorrhage and those of a primary adrenal growth, which, as shown by the presence of secondary growths, is certainly malignant, it is safest to rely on the infiltration of adjacent organs, such as the kidney or liver, or on the presence of secondary growths as evidence of malignancy rather than on the microscopic structure; and, as stated above, we have acted on this.

Practically there does not seem to be any very marked difference between the incidence of disease on the two sides of the body. In the twenty-five cases in which the seat of the primary growth affected is mentioned, the right side was affected in thirteen, the left in nine, while the growth is said to have affected both primarily in three, two of these being carcinoma, and the other sarcoma.

*Method and direction of growth.* Usually the tumor grows forward,

[1] Williams, R. Lancet, 1897, vol. i. p. 1261.
[2] Letulle. Archives de Science Méd., June 1, 1896, p. 80.

but, from its pseudo-cystic character, is less readily felt than a solid renal tumor. It may spread laterally under the peritoneum, and thus cross the aorta and involve the corresponding organ on the opposite side.

It is a possible explanation of cases where the growth appears to arise simultaneously in both suprarenal bodies, that the growth arises in one and then spreads by continuity to the other, the connection being insignificant as compared with the growths in the suprarenal bodies.

Probably some of the retroperitoneal sarcomata in the upper part of the abdomen may be derived from the suprarenal bodies;[1] in two large-celled hemorrhagic growths of this nature examined by us their origin either in the suprarenal or accessory suprarenal bodies was suggested, but could not be proved.

On the right side a malignant tumor may invade the right lobe of the liver by spreading directly to the free surface uncovered by peritoneum with which it is in contact. On the left side it does not appear to spread to the spleen, but as seen in our case it may attack the pancreas or stomach. If it infiltrates the kidney it may spread into the renal vein (Case 2), and even project into the inferior vena cava. It is, perhaps, a question whether the extension of a growth, not otherwise manifestly malignant, into the suprarenal vein should be regarded as undeniable evidence of malignancy, for it is known that somewhat analogous growths, the multiple adenomata of the liver, may discharge their contents into the portal vein,[2] and so give rise to the appearance of a malignant growth. It has seemed to us that the proof of the carcinomatous nature of some cases of so-called primary carcinoma of the liver, with cirrhosis, chiefly rests on the condition of the veins which contain extruded, softened adenomatous material or blood-clot, and that this criterion is open to justifiable criticism. There is, as Kelynack has pointed out, a striking resemblance between adrenal and hepatic adenomata, and we consider that the occurrence of suprarenal tumor-cells in the capsular vein would not of itself justify a positive diagnosis of malignant growth.

*Secondary growths.* The liver was the seat of secondary growths in fourteen out of our twenty-six cases, and was, in addition, invaded by continuity in three. The lungs were next in order, being occupied by secondary growths in six, the bronchial glands were also invaded in one of these six cases, while in the other case, in which the bronchial glands contained secondary growths (Case 24), the lungs were free.

The pleura was affected in three cases.

Secondary growths occurred in the kidneys only three times; but, in addition, the kidney was invaded by continuity in four other cases.

[1] Vander Veer. THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, January, 1892, vol. ciii. p. 22.

[2] Compare Delepine. Trans. Path. Soc. London, vol. xli. p. 363.

The aortic lymphatic glands were affected in six cases and the peritoneum on three occasions.

The stomach and pancreas were each affected twice, both of them being certainly invaded by continuity in Case 1, and it would have seemed probable that, from its close anatomical relations, the pancreas must frequently be infiltrated when the left suprarenal is the seat of new growth. This, however, does not appear to be the case in the recorded examples. The heart was affected in one case, as were the cerebrum, cerebellum, bones, and skin. The other adrenal was infiltrated by secondary growth in two cases.

*Condition of the opposite suprarenal body.* As already mentioned, the other suprarenal may become invaded by growth, either by continuity or by a true secondary neoplasm. It is, perhaps, difficult to prove that both suprarenals have been simultaneously affected by primary new growth, but this is the described condition in three instances (Cases 10, 16, 19). In two of our collected cases (21, 22) it is definitely stated that the other suprarenal body, though not invaded by growth, was enlarged. This suggests that compensatory hypertrophy may possibly take place in man, as it does in animals (Stilling). Whether this occurs in adults has not been established, but one of us has observed as many as five accessory suprarenal bodies on the right side in a boy, aged seventeen years, who died of chronic phthisis, without any signs of Addison's disease;[1] this suprarenal body contained caseous tubercle.

*Association with disease or malformation of the corresponding kidney* may only be a coincidence, but it must be borne in mind that congenital abnormalities or acquired changes in the adjacent kidney might quite conceivably be accompanied by or set up conditions in the suprarenal capsule which make for a typical or exaggerated growth. In this connection we may note, on two occasions we have seen adenomata of considerable size associated with chronic nephritis. The instances in which the association of disease or malformation of the kidney with adrenal neoplasm have been noted are, however, very few; thus in one case (No. 15) there was a double ureter on the same side; in Dr. Lee Dickinson's case (No. 4) a hydronephrosis of the kidney on the same side preceded the development of the adrenal growth for many years. In a case of tumor of the medulla of an accessory adrenal, recorded by Eurich,[2] there was congenital atrophy of the corresponding kidney.

Dr. F. C. Turner[3] recorded a case of round-celled sarcoma of both the suprarenal bodies in a case where there was a horseshoe kidney. There was a similar growth in the posterior mediastinum, and, since it is doubtful which of the two was the primary, the case has not been

[1] British Medical Journal, 1895, vol. i. p. 620.
[2] Eurich. Journal of Pathology, vol. iii. p. 505.
[3] Turner, F. C. Path. Soc. Trans., vol. xxxvi. p. 465.

included in our table. In Ritchie and Bruce's case nephroptosis followed the development of carcinoma of the suprarenal bodies, probably as the result of loss of fat.

It may be noted that in the first of two cases of "renal tumors derived from suprarenal rests," described by McWeeney,[1] the left kidney had for some time been floating, and six months before the tumor was removed the kidney, which then appeared healthy, had been stitched into its proper position (nephropexy) by Mr. H. A. Reeves at the Soho Hospital for Women. For these details we are indebted to the courtesy of Dr. McWeeney and Mr. Coppinger.

In our cases there is nothing to support the hypothesis that a floating kidney has any possible connection with the development of a primary neoplasm of the suprarenal body. Floating kidney is commoner in women and on the right side; in the thirteen female cases the growth was six times on the left side, five times on the right, and twice on both sides, and in none of them did nephroptosis precede the development of the tumor.

Histological Character of Malignant Suprarenal Tumors. Almost all the published cases have been described as sarcomata, Ogle's, Ritchie's, and Bruce's, and Weinburg's and Turquet's cases of carcinoma being the exceptions. Various forms of sarcoma have been met with, large or small round-celled, mixed or irregular, spindle-celled sarcoma with (Case 7) or without giant cells, etc.

Of our twenty-six collected cases the nature of the growth is definitely described in twenty-four; of these, nine are carcinoma and fifteen sarcoma.

The sarcomata were as follows:

| | |
|---|---|
| Mixed or irregular celled | 3 |
| Round | 2 |
| Small round | 2 |
| Large round | 1 |
| Spindle | 1 |
| Small spindle | 1 |
| Myosarcoma | 1 |
| Sarcoma (no further description) | 4 |

Out of our own cases (1 to 6) from St. George's Hospital there are no less than four, however, which we incline to call carcinoma, the other two being sarcoma.

The rarity of carcinoma in the recorded cases naturally makes us feel that great caution is required before definitely deciding that as many as four out of our cases of primary malignant disease of the suprarenal bodies are carcinoma. The arrangement of these suprarenal tumors

[1] McWeeney. British Medical Journal, 1896, vol. i. p. 323; and Transactions of the Royal Academy of Medicine in Ireland, vol. xiv.

which we consider carcinomatous is far from uniform; they, indeed, seem to vary in different parts in a manner which is almost characteristic. In some areas there may be a regular alveolar arrangement with well-formed fibrous tissue enclosing cells which are undoubtedly as epithelial as those in the normal adrenal body, while in other parts of the same tumor the appearances differ widely and, if seen alone, would certainly suggest sarcoma rather than carcinoma.

In Case 3 the structure was undoubtedly that of a spheroidal-celled carcinoma, and was specially well shown in the secondary growths in the liver. Much the same structure was found in Case 1, already described.

FIG. 2.

Microphotograph of malignant adenoma of suprarenal in a child three years old—Case 6. × 100.

In Case 6 (Fig. 2) the alveolar arrangement is well marked, columns of well-marked epithelial cells being separated from each other by capillaries, some of the epithelial cells are large, and may be called giant cells, while in the centre of the epithelial column the cells do not stain, and necrosis is taking place. This appearance might well be called an adenoma, for Manasse has described giant cells in adenomata, and degeneration changes are quite common in suprarenal adenomata. In this case the growth, however, cannot be merely an adenoma, for there were numerous growths in the liver, which weighed ten and one-half pounds, but must be regarded as a "malignant adenoma," or carcinoma. In other areas of the same tumor the appearances are quite different:

the alveolar arrangement is lost, either entirely or almost so, and there are hemorrhages and areas of necrosis. Here it appears probable that very rapid growth has taken place and that there is little interstitial tissue formed, while the general arrangement has been greatly disturbed by the occurrence of hemorrhage. On the whole, these three cases appear to have the structure of carcinoma rather than of sarcoma. We have already re-examined Dr. J. W. Ogle's specimen (St. George's Hospital Museum, Series x., No. 33 c) (No. 6, Table I.), and find that it has practically the same structure as Case 5, and should therefore be called a "malignant adenoma," or carcinoma.

FIG. 3.

Microphotograph of malignant adenoma of suprarenal—Case 5. × 100.

It may be noted in passing that the occurrence of a carcinomatous tumor in a child aged three years is most exceptional, if not quite unique, and is further evidence of the peculiar character of suprarenal neoplasms. So that four out of the six tumors examined by us belong to the group of malignant epithelial tumors, two of them are spheroidal-celled carcinoma, while the other two (Figs. 2 and 3) we propose to call malignant adenomata. The latter, it may be added, closely resemble the figures given by McWeeney,[1] in his description of "kidney tumors derived from suprarenal rests."

The difficulties surrounding the nomenclature of tumors arising in the kidney from suprarenal "rests" have been fully recognized and discussed by McWeeney. He describes two cases which he inclines

[1] Loc. cit.

to call carcinomata; but since they are developmentally mesoblastic and morphologically epithelial, he cautiously is content to term them "kidney tumors derived from suprarenal rests." The same difficulty, of course, applies to the primary malignant tumors of the suprarenal body which histologically resemble carcinoma rather than sarcoma. Nothing is gained by calling them endotheliomata, and it appears justifiable to call them carcinomata, according to their structure, and for the time being to neglect the developmental origin of the suprarenal body.

These carcinomatous tumors of the suprarenal bodies seem to form a definite group of carcinoma, from their anomalous and irregular structure.

By reference to our table it will be seen that out of twenty-six cases nine may be called either "malignant adenoma," or carcinoma. At any rate, they belong to the class of epithelial malignant tumors rather than to the sarcomata. Of the rest it is possible that some of those described as round-celled sarcoma might, if examined in other parts, have shown a structure analogous to that of the malignant adenomata or carcinoma. Mr. Morris' description of one of his cases (No. 18) as resembling microscopically the medulla of the suprarenal, is quite compatible with the view that it was a "malignant adenoma;" but we have not included it among either the nine cases of carcinoma or the fifteen cases of sarcoma. It is certain that all the tumors of malignant nature arising primarily in the suprarenal bodies are not of the same nature, since no less than fifteen of our cases belong to the sarcomata, including examples of most of the different varieties. The two cases of sarcoma in the six cases examined by ourselves (Table I.) were both mixed-celled sarcomata. Some of the carcinomata would appear to arise in the medulla, but there are not sufficient data for determining the usual origin of malignant tumors on the suprarenal bodies, whether from the cortex or medulla, or both.

Leith[1] refers to the question whether the sarcomata arise from the suprarenal itself, from its connective tissue, or from that around it, and considers it a barren problem. Our own impression is that malignant tumors of the suprarenal bodies are peculiar and form a special class; they may approach structurally either the carcinomata or the sarcomata and sometimes one and the same tumor may, in different parts, resemble both. We have for convenience divided them into the two categories; but it is, perhaps, questionable whether this classification is always entirely satisfactory or always reliable.

Since the suprarenal bodies may be regarded as mesoblastic from a developmental point of view, and as epithelial from a morphological, it is perhaps natural that it is not always easy to assign the tumors

[1] Edinburgh Hospital Reports, vol. iv. p. 289.

that arise in them to either the mesoblastic (sarcomatous) or epithelial (carcinomata) group of malignant tumors.

It is conceivable, then, that many, though not necessarily all, of the sarcomata arising in the suprarenal bodies are, like carcinomata, derived from proliferation of the secretory cells of the organ.

In passing, it is interesting to note that the difficulties that surround the histology of the malignant tumors of the suprarenal bodies are also seen among other members of the ductless glands, such as the thymus, pituitary, and spleen.

Review of the Clinical Symptoms. The question whether malignant disease of the suprarenal bodies ever gives rise to the symptoms of Addison's disease has exercised the minds of many observers, and has been discussed by one of us in the Gulstonian Lectures on the suprarenal bodies for 1895. The consensus of experience and opinion is decidedly against the view that secondary malignant growths in these bodies induce symptoms of Addison's disease, and probably this may be explained by supposing that the primary malignant disease kills the patient before there is time for the characteristic symptoms of Addison's disease to appear. Much the same appears to be the case with regard to primary growths in the suprarenal bodies. It does not appear that the complete clinical picture of Addison's disease has been presented by any one case of primary malignant disease of the suprarenal bodies, even when both the organs have been invaded; but some of the symptoms of Addison's disease may occur in primary adrenal new growths. Pigmentation has been observed very rarely; in Lee Dickinson's[1] case, however, it is especially noted that during the last six or seven months of life dirty-brown pigmentation of face, neck, and axilla, with a few patches on the rest of the body, developed; while in both Dr. J. W. Ogle[2] and Dr. T. Colcott Fox's[3] cases in children the skin was gypsy-colored, though not bronzed. Vomiting, probably due to irritation of the abdominal sympathetic, was a marked symptom in Dr. Ogle's and in some other cases.

Asthenia was very notable in Drs. Affleck and Leith's case, and is mentioned in Dr. Dickinson's and Dr. Sansom's cases, but is, perhaps, generally not more marked than in patients dying of malignant disease elsewhere, and this is especially noted as being the case in Drs. Ritchie and Bruce's examples of carcinoma involving both suprarenal bodies.

Pain in the back, often seen in Addison's disease, may also occur in malignant disease, and suggest aneurism or deep seated new growth (Case 7).

*Abdominal symptoms and diagnosis.* In the first place, as in Case 1,

[1] Dickinson, Lee. Trans. Path. Soc. London, vol. xlv. p. 129.
[2] Ogle, J. Ibid., vol. xvi. p. 250.
[3] Fox, T. C. Ibid., vol. xxvi. p. 460.

the tumor, though of considerable size, may, from its cystic and soft character, entirely escape detection during life, and may from the constitutional symptoms merely suggest deep-seated malignant disease, latent carcinoma of the stomach, or aneurism.

Again, though the primary growth may remain comparatively latent, the secondary growths may give rise to such enlargement of the liver that clinically the case is one of malignant disease of that organ, either primary or secondary, without any evidence to show the situation of the original growth.

When the tumor is palpable it may be mistaken for a number of other conditions: when on the right side for tumors or hydatid cysts of the liver (Case 2), but here the hydatid thrill is absent and puncture at best only brings away a little blood. In such cases examination of the aspirated material might reveal the existence of new growth, but care would be necessary, at any rate, when examining the material fresh, to distinguish its constituent cells from the altered liver-cells obtained from the cylinders of softened hepatic substance in the neighborhood of an abscess.

The danger of tapping doubtful abdominal cysts or tumors by inserting a trocar through the abdominal wall is manifest, not only from the possibility of wounding parts of the intestinal tract, but from the risk attaching to leakage of the contents of the cyst into the peritoneal cavity, or from hemorrhage. An exploratory incision is preferable, inasmuch as it is more likely to clear up the diagnosis and is safer for the patient.

Peritoneal effusion is to be expected in cases of intra-abdominal growth from various causes, indirectly from chronic peritonitis set up by the growth, or directly from pressure or obstruction of the portal system.

In two cases leakage from or rupture of the hemorrhagic growth gave rise to the presence of blood in the effusion (Cases 2, 21).

In one case (No. 22) the portal vein was thrombosed, and at the autopsy there was a little blood-stained fluid in the peritoneal cavity. In one case (No. 1) there was some turbid ascitic fluid, which may be explained as due to second growths in the mesentery giving rise to peritoneal inflammation. In Case 4 there was œdema of the abdominal wall, but no ascites.

The resemblance that malignant suprarenal tumors may show clinically to abdominal aneurisms, both in the existence of pain in the back and pulsation (Cases 1, 21), has been already referred to.

Suprarenal tumors may possibly, when large and projecting forward, imitate an enlarged gall-bladder,[1] but they are usually covered by in-

[1] Robson, Mayo. Allbutt's System of Medicine, vol. iv. p. 229.

testines, and are not nearly so tense or firm. Suprarenal tumors hardly ever seem to be associated with jaundice. A large tumor or a secondary growth in the portal fissure might easily produce this, so that its absence in previously recorded cases seems to be but an accident. Vander Veer[1] describes a large retroperitoneal tumor weighing over six pounds, which, arising from the region of the left suprarenal body, so interfered with the bile-duct as to produce jaundice. The tumor was shown microscopically to be a myxosarcoma, and contained mucoid fluid, thus differing from all the cases of primary sarcoma of the suprarenals that we have collected. This case has not, however, been included in our tables, as there is no mention of secondary growths.

A suprarenal tumor is most likely to be regarded clinically as a renal instead of a perirenal tumor, and from their close anatomical relations this is almost unavoidable. From its position in the abdomen, viz., nearer the diaphragm than the kidney, the suprarenal if greatly enlarged might naturally be expected to displace the colon downward rather than forward. Dr. W. H. Dickinson[2] noted this in Dr. Ogle's case, and it has been therefore looked for in several cases. Sometimes this holds good, but not invariably, and it is therefore not likely to be of much diagnostic value. It is quite possible to lay too much stress on the relation of the colon to renal tumors, and it is interesting to recall Dr. Gee's[3] aphorism on this point: "A renal tumor on the left side very often pushes the colon in front of it; but this condition is never found on the right side;" while H. Morris[4] says that "as an exception a right renal tumor may push the ascending colon down instead of bearing the gut forward in front of itself."

Suprarenal tumors are, as has been seen, particularly liable to become broken down in the centre and to resemble cysts, if indeed they are definitely felt, while renal tumors are (apart from hydronephrosis and cystic disease) solid and readily palpable.

*Renal tumors are of course much commoner.* With regard to the occurrence of rapidly-growing tumors in children, the probabilities are in favor of renal as against suprarenal tumors, both from the greater frequency of kidney tumors and also from the fact that when suprarenal tumors occur there is no special predilection for early youth, as shown by our twenty-six cases, of which four were under four years of age. Our figures differ somewhat from Mr. R. Williams' thirty-six cases of primary malignant growths of the suprarenal bodies, in which one-third

[1] Vander Veer. THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, January, 1892, vol. ciii. p. 22.

[2] Dickinson, W. H. Renal and Urinary Affections, vol. iii. p. 722.

[3] Clinical Aphorisms from Dr. Gee's Works. St. Bartholomew's Hospital Reports, 1895, vol. xxxii. p. 43.

[4] Morris. Allbutt's System of Medicine, vol. iv. p. 458.

were in children. Rapidly growing sarcomata of the kidneys in children, on the other hand, form a well-recognized class of tumors.

We have recently, through the kindness of Mr. D'Arcy Power, had the opportunity of examining two large sarcomata in young children under his care in the Victoria Hospital for Children. In both cases dissection showed their renal origin, and their microscopic structure was a very small-celled sarcoma, which differs markedly from what is usually seen in suprarenal growths, though occasionally (Cases 8, 10) small, round-celled sarcoma has been described in primary adrenal neoplasms. Hæmaturia would, if present, indicate renal growth, but inasmuch as many cases run their course without it, the absence of hæmaturia has little value as a sign of suprarenal growth as against malignant tumor of the kidney.

It does not appear that there is any criterion by which a suprarenal growth can with certainty be distinguished clinically from a renal neoplasm. The diagnosis is extremely difficult, and must be attempted by attention to the various points of difference referred to above, and by a process of exclusion.

*Retro-peritoneal lipomata.* This condition, though equally rare, might imitate a large suprarenal growth. Adami[1] has collected forty-two examples, of which one-third were perirenal in origin. The growth is slow, but reaches a large size, most of the recorded cases weighing over twenty pounds. The tumor usually begins on one or the other side of the abdomen, and is accompanied by little general disturbance of health, except emaciation and eventually dyspnœa; œdema of the legs may result from pressure on the inferior vena cava. The disease is much slower in progress than adrenal growths, and is often mistaken for ascites, but repeated tappings fail to withdraw any fluid, while in fluctuating adrenal growths (vide Case 2) blood is withdrawn.

Pancreatic cysts might be confused with malignant tumors of the left suprarenal body; both of them may, though neither constantly do, lie behind the stomach.

Pancreatic cysts are, however, more tense, harder, and more definitely felt than suprarenal growths.

Hemorrhagic peri-pancreatic cysts and hemorrhagic abdominal cysts may also resemble the rarer condition of suprarenal growth. The position of pancreatic and peritoneal sanguineous cysts is subject to considerable variation, as has been well shown in Mr. Doran's[2] diagrams, and in some positions are hardly likely to imitate suprarenal growths closely. A history of injury, while suggesting a hemorrhagic cyst, does not prove it, since malignant growths may develop after a blow, while

[1] Adami. Montreal Medical Journal, January and February, 1897.
[2] Doran. British Medical Journal, 1897, vol. ii. p. 1779.

the history of traumatism is not always forthcoming on the former condition. The nature of the fluid obtained by paracentesis would no doubt assist in arriving at a diagnosis; the presence of ferments or altered blood being in favor of pancreatic and sanguineous peritoneal cysts, and the presence of recent blood or fragments of growth in favor of a suprarenal neoplasm.

The free mobility of mesenteric cysts should prevent any danger of their being confused with suprarenal growths.

*Pulmonary symptoms.* Dyspnœa may be due to the growth pressing the diaphragm up, as in Case 2, where the tumor was of very large dimensions, and so resemble retroperitoneal lipoma, uterine fibromyomata, and other large tumors such as ovarian cysts or ascitic effusions.

In one of our own cases, and in Dr. S. West's, the patients died with pneumonia, and, since there were secondary growths present in the lungs, it appears not improbable that they played a definite part in the development of the pneumonia. It may, of course, have been merely accidental, as in a case of a girl, aged twelve years, with a tumor described[1] as malignant in one suprarenal, where death was also due to pneumonia; since, however, there were no secondary growths, we have not included this case among the recorded examples of undoubted primary malignant growths.

*Œdema of the legs.* Affleck and Leith comment on the fact that, although the inferior vena cava was blocked in four or five of their twenty cases of sarcoma, œdema of the feet did not occur. It so happens that in five out of the six cases observed in St. George's Hospital, œdema of the legs was present, and in Dr. Sansom's case from the London Hospital œdema was also present, although the subcutaneous veins over the abdomen were dilated. There was, it is true, mitral stenosis, but œdema does not occur until late in the disease, and examination of the notes does not show that the patient suffered from cardiac symptoms.

*Other symptoms.* In two cases (19, 25) the symptoms were chiefly those of cerebral tumor which was a secondary growth.

In Case 23 the pressure of the tumor on the nerves of the lumbar plexus gave rise to pain down the left leg; in this case there was an irregular temperature, which, as Butlin and Colby[2] have shown for sarcoma, is by no means unusual in patients with rapidly growing malignant tumors. The temperature was also raised in Case 4.

Emaciation is often a marked feature, but in Dr. Ogle's case (No. 6) the child, aged three years, was remarkably developed and weighed

[1] Greenhow. Pathological Transactions, vol. xviii. p. 260

[2] Butlin and Colby. St. Bartholomew's Hospital Reports, 1895, vol. xxxi.

forty-four pounds, which is much in excess of the normal weight at that age, which, according to Galton's *Life History Album*, is thirty-three and one-half pounds in clothes.

Excessive development of hair has been occasionally noted (Cases 6, 26).

*The prognosis* is, of course, hopeless unless the growth is removed by surgical means. The anatomical characters of primary suprarenal neoplasms would undoubtedly appear to render operative interference more difficult than in the case of renal tumors. Mr. H. Morris[1] has successfully removed a suprarenal growth, but secondary tumors existed in the liver at the time of the operation.

The following conclusions appear to be justified from the foregoing study of the general character of primary malignant growths of the suprarenal bodies.

1. They are rare, but their anatomical characters are fairly constant: hemorrhagic, with a tendency to break down in the centre and form a pseudo-cyst. There is no marked difference in the incidence of the disease on the two sides of the body.

2. Sarcoma is the more frequent form, occurring in fifteen out of twenty-four cases; carcinoma also occurs, being met with in nine cases. There is considerable variation in the structure and nature both of the sarcomata and of the carcinomata met with.

3. The sexes are affected equally, but the average age of female cases (thirty-one and a half years) is much lower than that of males (forty-three and five-tenths years).

4. The average age is thirty-seven and five-tenths years, and is lower in cases of sarcoma than in carcinoma.

5. There is no special tendency to the incidence of these tumors in early life. The four cases which occurred under four years of age were all female.

6. Secondary growths occur most frequently in the liver.

7. The typical clinical picture of Addison's disease is not presented, but in some rare instances it is partially, though imperfectly, suggested.

8. There is a great variety in the clinical aspect of the cases, but the condition which it most often resembles is that of renal tumor. There is no certain way of constantly distinguishing suprarenal from renal tumors, though there are several points which may help in the differential diagnosis.

[1] British Medical Journal, 1893, vol. i. p. 2.

TABLE I.—CASES FROM ST. GEORGE'S HOSPITAL (6).

| No. | Sex and age. | Which suprarenal affected | Nature of growth. | Secondary growths. | Clinical characters. | Pigmentation. | Remarks. |
|---|---|---|---|---|---|---|---|
| 1 | M. 50 | Left. | Spheroidal celled carcinoma, with some multinuclear cells. | Liver, peritoneum. | Abdominal aneurism. | None. | Ascites; œdema of the feet. For details see text. |
| 2 | M. 25 | Right. | Mixed-cell sarcoma. | In aortic lymphatic glands; growth projects into right renal vein, invades liver and kidney | Those of hydatid cyst of liver; no thrill; previous to admission to St. George's Hosp. was in St. Thomas's, under Dr. Bristowe, where hydatid was diagnosed. (See St. Thomas's Hosp. Reps., vol. xxi. p. 328.) Puncture only brought out blood; dyspnœa from upward displacem't of diaphragm. | None. | Displaced the transverse colon downward, and duodenum to left of the spine, growth crossed the spine and projected to the left of the cardiac end of the stomach; two pints of blood-stained ascitic fluid; œdema of the feet; no peritonitis. |
| 3 | M. 40 | Right. | Spheroidal celled carcinoma. | Right lung, left lung; liver, especially in lobulus Spigelii; aortic glands. | Only in hospital two days with right-sided pneumonia due to growths in lung. | None. | No ascites; œdema of legs. |
| 4 | M. 57 | Right. | Mixed-cell sarcoma. | Pleura and lungs; liver extending into inferior vena cava. | Hæmaturia and renal tumor for 8 years. Latterly like Addison's disease. Raised temperature. | Pigmentation, axillæ, nipples, body. | Œdema of legs and of abdominal walls, but no ascites; carried asc. colon in front of it. Kidney shows old standing hydronephrosis. Recorded by Dr. Lee Dickinson in Trans. of Path. Soc., vol. xlv. p. 128. |
| 5 | F. 52 | Right. | 'Malignant adenoma.' | Liver 10½ pounds; numerous growths. | At first thought to be leukæmia. Very ill and anæmic with enlarged liver and spleen; ascites; hæmic murmurs, leucocytosis. | None. | Kidney invaded; right pleural effusion; ascites; œdema of legs. |
| 6 | F 3 | Left. | 'Malignant adenoma.' | Liver. | Constant vomiting. Child was stout, weighing 44 lbs., normal weight for child of that age being 33½ lbs. in clothes.—*Vide* Galton's Life History Album, p. 12. | Gypsy color of skin; much pubic hair; a decided moustache. | Colon depressed downward by growth, not carried in front of it. (*Vide* Dickinson on Renal and Urinary Affections, vol. iii. p. 722.) This case is fully described by J. W. Ogle, Path. Soc. Trans. Lond., vol. xvi. p. 250. The specimen is in St. George's Hospital Museum (series x. 33c.); has been re-examined. |

TABLE II.—CASES COLLECTED FROM LITERATURE (14).

| No. | Authority. | Publication | Sex and age. | Which suprarenal affected | Nature. | Secondary growths. | Pigmentation. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 7 | Affleck and Leith. | Edinburgh Hosp. Reps., vol. iv. p. 278. | M. 46 | Right. | Hemorrhagic, irregular-celled sarcoma with large multinuclear cells. | Liver, stomach, pleura, sternum, ribs, lymphatic glands. | No. | Thrombosis of inferior vena cava; no œdema of the feet; no vomiting; emaciation. |
| 8 | Muir. | Quoted by Leith. | M. 31 | Right. | Small round hemorrhagic cystic sarcoma. | Invading the liver and kidneys. | No. | |
| 9 | Muir. | ..... | F. 50 | Left. | Cystic sarcoma. | Large retroperitoneal tumor weighing 26½ lbs. | No. | |
| 10 | Rosenstein | Virchow's Archiv, Bd. lxxxiv. S. 322. | M. 40 | Right and left. | Small-celled sarcoma. | Lt. kidney, pancreas, heart. | No. | |
| 11 | T. C. Fox. | Trans. Path. Soc. Lond., vol. xxxvi. p. 460. | F. 2 | Left. | Large-celled sarcoma. | Liver. | Gypsy-colored skin, not bronzed. | Vomiting; ravenous appetite; thrombosis of inferior vena cava; no œdema of feet; colon displaced forward. |
| 12 | F. Fränkel. | Virchow's Archiv, Bd. ciii. S. 244. | F. 18 | Left. | Spindle-celled sarcoma. | Secondary in right adrenal. | No. | |
| 13 | C. Berdach | Wien. Med. Woch., vol. xxxix. p. 357. | M. 55 | Left. | Small spindle-celled sarcoma. | Liver. | No. | |
| 14 | M. Cohn. | Berlin klin. Woch., March 12, 1894. | F 9 m'n | Right. | Round-celled sarcoma. | Liver, thorax, kidney. | No. | |
| 15 | S. West. | Trans. Path. Soc., vol. xxx. p. 419. | M. 57 | Right. | Sarcoma. | Bronchial gland, lung. | No. | Double ureter to corresponding kidney; inferior vena cava stretched over growth; death from pneumonia, possibly due to growth. |
| 16 | Ritchie and Bruce | Edinburgh Med. Jour., vol. xxxiii. p. 12. | F. 73 | Right and left. | Carcinoma. | Lungs. | No. | Vomiting. |
| 17 | H. Morris. | Brit. Med Jour., 1893, vol. i. | M. 51 | ..... | Not described. | Nodule behind peritoneum | No mention. | Kidney expanded by suprarenal growth; not invaded. |
| 18 | ..... | ..... | M. 43 | Right. | Resembles medulla of the suprarenal. | Skin, liver (seen here during operation), temporal region. | No jaundice. | Upper part of kidney eroded; tumor successfully removed during life; recurrence took place subsequently. |
| 19 | Weinberg and Turquet. | Bull. Anat. Soc. Paris, 1897, p. 751. | F. 36 | Right and left. | Carcinoma. | Vermiform process of cerebellum. Both lungs. | ..... | Dilated stomach, diarrhœa; lumbar pain; vomiting, severe headache due to cerebellar growth. |
| 20 | Eberth. | Virchow's Archiv, Bd. lv. | F. 1⅝ | Right. | Myosarcoma. | Lt. kidney; peritoneum over diaphragm. | | |

TABLE III.—CASES NOT PREVIOUSLY PUBLISHED (6).

| No. | Source. | Publication | Sex and age. | Which suprarenal affected | Nature. | Secondary growths. | Pigmentation. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 21 | Dr. Sansom. | London Hospital Museum, 1787. | F. 38 | Right. | Round-celled sarcoma, hemorrhagic; rupt're into abdomen, mesenteric gland. | Liver, inferior vena cava blocked. | No; no jaundice. | Inferior vena cava invad'd and blocked by growth. Ascites, hemorrhagic growth ruptured into peritoneum, so free blood clot as well. Dilated veins over abdomen. Œdema of the legs (mitral stenosis). Left suprarenal enlarged, but free from growth. |
| 22 | Dr. S. Fenwick. | ..... | M. 62 | Right. | Carcinoma contained 6 ozs. of blood clot. | Liver, stomach, pancreas invaded by continuity, mesentery. | No; no jaundice. | Clinically it rather simulated aneurism. It pulsated, but pulsation was not expansile. Left suprarenal enlarged, but free from growth. Vena porta and inferior cava thrombosed. A little blood-stained fluid in peritoneal cavity. |
| 23 | Dr. W. T. Brooke. | Radcliffe Infirmary, Oxford. | F. 49 | Left. | Carcinoma; as in so many cases the appearance was anomalous. | Liver, lungs, left kidney by continuity, right adrenal. | No. | Irregular temperature; emaciation. No vomiting; pain down left leg from involvement of lumbar nerves. |
| 24 | ..... | Middlesex Hospital Museum. | F. 55 | Left. | Large-celled sarcoma, alveolar in parts. | Bronchial glands. | | |
| 25 | ..... | Post-mort. Book and Register, 1888, Hosp. for Sick Children, Great Ormond St., under Dr. Angel Money. Leave to refer to it was kindly given by the Dean, Dr. F. G. Penrose. | M. 8¾ | Left. | Sarcoma. | In brain. | No; no jaundice. | Inferior vena cava compressed, not thrombosed. No ascites, no peritonitis, no œdema of legs. Symptoms chiefly cerebral; vomiting, headache, optic neuritis. |
| 26 | ..... | Royal College of Surgeons Museum, London, No. 3518 E. | F. 32 | Right. | Carcinoma, composed of elongat'd alveoli filled with large granular epithelial cells; the alveoli are separated by capillary vessels and a very scanty stroma. | Liver, aortic lymphatic glands. | ..... | Growth projected through capsular vein into inferior vena cava. Face and extremities so thickly covered with hair that a razor had to be used. |

# ANOMALOUS POSITIONS OF THE COLON;

## With Report of a Case Discovered by Exploratory Operation.

By John B. Shober, A.M., M.D.,
obstetrician to the Philadelphia Hospital; gynecologist to the Howard Hospital; assistant surgeon to the Gynecean Hospital.

On September 11, 1897, at Bar Harbor, Maine, E. B., aged thirty-six years, first consulted me in regard to his health. He was extremely despondent and melancholy, and stated that for weeks he had eaten very little, barely enough to keep alive, sometimes eating only once a day; that he was losing strength rapidly, and that, owing to increasing discomfort in the lower part of the right side of the abdomen he feared that there might be some disease of the appendix.

For sixteen years he has been an invalid. He is over six feet tall, and weighs about 140 pounds. He is much emaciated, of dark, sallow complexion, and melancholy expression. He has never had any serious acute disease. No tuberculosis in his family. His father died about a year ago of sarcoma of the superior maxillary bone. His mother died of apoplexy in her sixty-sixth year. A brother and sister died of typhoid fever. One brother and two sisters are living and healthy.

At various times he has been treated for supposed disease of the liver, for chronic indigestion, for weak heart, for neurasthenia, nervous prostration, etc. He does not remember ever having had an attack of abdominal inflammation. He was always delicate as a child, but until his sixteenth year he enjoyed fairly good health. About that time he broke down with what was called nervous prostration, and he has never been well since.

For sixteen years past he has been conscious of discomfort, weight, uneasiness, and occasional sharp, sudden pain all through the region below and to the right of the umbilicus. He always eases himself in this region as much as possible. These feelings are becoming more and more intense, with at times a dull, heavy, aching pain and a feeling as if a mass as large as an orange was there. Often there is distention, and he passes much flatus. His general symptoms are those of malnutrition and auto-intoxication from faulty assimilation of food. Often his digestion is so poor that for days he eats almost nothing. He then becomes so prostrated and weak that he can scarcely walk. Such is his present condition. At these times his pulse is weak and slow (58 or 60), and there is a dull and heavy feeling in the head as though a weight were on it. He recovers slowly from these attacks, and is able to take moderate exercise and even ride a bicycle. The discomfort and pain in the right iliac region has increased considerably during the past six months. The bowels, though seldom constipated, are usually costive, and he uses glycerin suppositories for relief. He is very despondent, and says that life is not worth living; that he would be willing to lose his right arm if thereby his general health could be improved.

*Physical Examination.* He is extremely emaciated, sallow, and anæmic, with an expression of deep despondency. The tongue is tremulous, large, flabby, and slightly coated. Lungs normal. Action of heart weak and slow (58). Valvular sounds normal; no organic lesion.

Liver, spleen, and kidneys are apparently normal. On examination of the abdomen there is noted slight tension of the right rectus muscle and resistance over the caput coli. The colon is somewhat distended. Deep pressure at McBurney's point causes him to wince and produces decided pain. A mass in the region of the vermiform appendix can be palpated, and feels about the size of a small cigar, pointed south. Pressure upon it causes pain. The urine was examined a few days later. It was normal as to color and reaction, contained no albumin or sugar, but there was an excess of urates and a few oxalates.

The patient was told that some unusual condition existed in this region of his abdomen, with a possibility of chronic dissase of the appendix, and a consultation was requested.

On September 13th Dr. L. Bolton Bangs, of New York, saw the patient with me. He confirmed the diagnosis of possible chronic appendicitis, and advised exploratory operation. The patient was told that the diagnosis was very uncertain; that it was clear that some abnormality existed which justified exploration. He consented, and arrangements were made to have the operation performed in Philadelphia as soon as possible after our return.

On September 27th he was admitted to a private room at the Howard Hospital, Philadelphia, and on the following day Dr. Edward Martin saw him in consultation. The same opinion was given as in the consultation with Dr. Bangs.

On September 29th I operated, with the assistance of Dr. Martin. The usual incision for appendectomy was made. The caput coli was not in its usual position. It was found dipping over the brim of the pelvis on the right side, becoming lost below the peritoneum, so that the appendix was entirely subperitoneal and could not be located. The ascending colon took its usual course. Loops of large intestine, presumably transverse colon and the first portion of the descending colon, occupied the upper portion of the abdominal cavity and covered the small intestine. These loops could be readily drawn down into the abdominal wound. The middle portion of the descending colon was found to cross the vertebral column obliquely from above downward, and from left to right, thus causing the sigmoid flexure to enter the pelvis on the right side of the promontory of the sacrum between it and the first portion of the ascending colon, thus it occupied the normal position of the appendix, and it was the abnormally placed sigmoid which had been felt by palpation and which caused pain on pressure. (See Fig. 1.) In order to prove the anomalous position of the sigmoid at the operation, an assistant nurse was instructed to pass a long rectal tube per rectum. It was passed six or seven inches, and was found to enter the sigmoid which was held between the fingers immediately below the abdominal wound. This would have been impossible had the sigmoid occupied its normal position. The ileo-colic juncture was sought for, but could not be located. The lower portion of the ileum, however, was traced to the anterior fold of the mesocolon, about one inch above the brim of the pelvis. It could not be traced further, as the mesocolon at this point was short and merged into the peritoneum lining the false pelvis. Thus, in order to have found the caput coli and the appendix, it would have been necessary to have opened the peritoneum posteriorly and to have performed an extensive dissection. This course was considered unjustifiable, as there was no evidence of trouble with the caput

coli or of the appendix other than their anomalous positions, and sufficient abnomality had been found to accunt for the state of the patient's health.

The abdominal wound was closed as quickly as possible with buried catgut sutures in layers and subcutaneous catgut for skin.

FIG. 1.

Convalescence from the operation was uninterrupted, except that on or about the tenth day superficial suppuration occurred in the wound, which required almost daily dressing for several weeks. At the end of this time there was firm, strong union. The following is a note from my case-book on November 11, 1897:

"During convalescence the patient absolutely refused to take any kind of treatment which was advised. He has been for a long time and is still in a state of nervous prostration. He is decidedly neurasthenic and a hypochondriac. Dr. John H. Musser has seen him several times in consultation, with a view to outlining some form of treatment which might meet the mechanical problems of this most unusual case. We find it impossible to do anything with him. He positively refuses to take advice."

In contradistinction to those cases in which the caput coli is found to occupy high positions in the abdominal cavity, such as the right lumbar and hypochondriac regions, and the many reported cases of imperforate anus and other cases of obliteration of one or more portions of the colon, we have to look upon this case, it seems to me, as one of overdevelopment of the colon. It is well known that in early fœtal life the colon is so arranged that it forms almost a straight canal from above downward, and that in the early months the cæcum describes a curve downward and to the right until it finds its place in the right iliac fossa at about the end of the fourth month of pregnancy. At the same time

other developmental changes are taking place at the distal end of the colon which result in the formation of the rectum and anus. When this process of development is interrupted either by reason of peritonitis in the fœtus, causing adhesions, or by reason of some other cause, the normal development may be permanently arrested, or at least retarded, thus resulting in the abnormalities alluded to above. In many of the reported cases of arrested development have been found scars of the peritoneum, bands and adhesions, and even membranes separating different parts of the intestines from each other. These seem to be indications of a peritonitis occurring in the fœtus, and they have been considered the causative agents in the arrest of development. The above case, on the other hand, is one in which the cæcum has been drawn down into a lower position in the abdominal cavity than it should normally occupy, as in a case reported by Turner,[1] carrying with it the ileo-colic juncture as well as the vermiform appendix. It is also to be remarked that it seems to have developed between the layers of the mesentery and behind the peritoneum, thus being bound down in such a manner as to have very little play. Under such circumstances it is easy to understand that there would be a constant tendency to retention of feces, and even impaction in the caput coli. By reason of its bound-down position the cæcum would have great difficulty in evacuating itself. Again, these cases of elongated and coiled sigmoid flexures seem to me to be the result of overdevelopment of this portion of the colon. This may also be said of those cases of lengthened transverse colon and the cases in which the descending colon ascends again before descending into the pelvis on the right side, or in the middle line, or normally on the left side. The question as to whether such conditions of overdevelopment are congenital or acquired during infancy or early childhood is one which cannot be readily decided. The writer is inclined to believe that in some cases these abnormalities may reach their full development in the fœtus, but that in many instances the process of overdevelopment goes on after birth, extending over periods of years. In support of this belief it is only necessary to remember that a very large number of cases have been reported in adults; in people who have been enjoying good health until some such cause as a gravid uterus or an obstinate constipation with impaction has caused an obstruction resulting in fatal ileus. Again, many of these cases have died of some other disease, as typhoid fever or pleurisy.

Depending upon the extent and character of the abnormality, these cases must suffer more or less from a sluggish action of the bowels and have a tendency to constipation, and, therefore, must be in constant danger of obstruction.

[1] Edinburgh Med. Journ., 1863-64, vol. ix. pp. 110-116.

When a condition exists such as has been described in the case above reported, it is easy to understand how difficult it would be for the colon to empty itself normally. There is a constant tendency for feces to be retained in the caput coli, and the descending colon as it crosses the vertebral column in its oblique descent from left to right would present another seat of possible obstruction. The patient declares that for many years past he has had a feeling of uneasiness, weight, and fulness in all that region below the umbilicus and to the right of the median line, and that at times he has felt as though a mass were there as large as an orange. At these times all his symptoms of ill-health are intensified, and he becomes so prostrated that he is scarcely able to walk; his appetite is entirely destroyed, so that food disgusts him; he has a feeling of weight on the top of the head, the complexion becomes sallow and muddy; he sinks into a condition of great despondency, so that life does not seem worth living. These are the symptoms of auto-intoxication from retained feces, and the abnormality discovered sufficiently accounts for the condition.

INDICATIONS FOR TREATMENT WHICH SUGGEST THEMSELVES. Regular mechanical unloading of colon by high enemas; massage; electricity, local and general; diet (experimental); blood-making food and tonics, such as carnogen and pepto-manganate of iron, aids to digestion, like pepsin, pancreatinin acids, etc.; regulated exercise and fresh air.

*Eighteen Cases in which the Sigmoid Flexure and the Rectum were Found on the Right side of the Pelvis.*

J. Chiene,[1] among a number of interesting cases of congenital anomalies of the intestine found in the dissecting-room, records two in which the sigmoid flexure was on the right side.

1. A male. The sigmoid flexure passed across to the right iliac region, where it was tied down by the peritoneum before it entered the pelvis to the right of the middle line.

2. A male. The cæcum and ascending colon were largely dilated and their coats thinned. They possessed a large mesentery, and were freely movable. The sigmoid flexure crossed to the right side and was tied down in the right iliac fossa before it entered the pelvis on the right side of the middle line.

3. W. Gruber[2] reports several abnormalities of the colon, the third being a case where the descending colon crossed the vertebral column obliquely, and the sigmoid and rectum thus descended on the right side of the pelvis. (Similar to case of E. B.)

4. He records still another where there was shifting of the rectum to the right side, the sigmoid descending into the pelvis over the promontory of the sacrum.

5. J. Reid[3] quotes a case recorded by Annesley, that of a boy seven

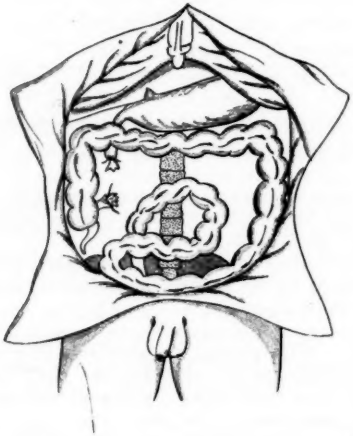
[1] Journal of Anatomy and Physiology, London, 1867-69, vol. ii. p. 14.
[2] Arch. f. path. Anat., etc., Berlin, 1865, vol. xxxii. p. 94.
[3] Edinburgh Medical and Surgical Journal, 1836, vol. xlvi. pp. 70-74.

years old. The caput cæcum was found lying in the right lumbar region; from this it followed its usual course, until it reached the left iliac fossa, where it crossed the spine to the right iliac fossa; here it turned upon itself and passed into the pelvis upon the right side. The trunk of the interior mesenteric artery, after sending off the left colic and sigmoid branch, passed to the right of the spine, accompanying the intestine. The testicles had descended.

6. A Buchanan,[1] in an article entitled "Fatal Cases of Obstruction and Enormous Distention of Belly arising from a Peculiar Conformation of the Colon," describes a case in which the colon observed its usual course as far as the left groin, when it again ascended as high as the transverse arch immediately under the liver, and then, turning to the right side, it descended into the pelvis.

7. Another case was that of a man whose bowels had been obstinately constipated for some time. The patient died eight days after admission to the hospital in agony from distention. The sigmoid flexure was much larger than usual, lying chiefly in the umbilical region, in front of the small intestines, having its ascending portion on the left side and its descending portion on the right. The obstruction was due to a twist of the intestine where the colon terminates in the rectum (Fig. 2).

FIG. 2.



8. J. Von Droste-Hulshoff,[2] in 1829, relates an instance of a girl, eleven years old, who died from obstruction of the intestines. The autopsy showed that the sigmoid flexure crossed into the right iliac region over the body of the last lumbar vertebra, and then, curving to the left, descended into the pelvis on the right side. The proximal portion of the loop lying over the beginning of the rectum caused obstruction by pressure.

[1] London Medical Gazette, 1839, vol. ii. p. 639; 1840, vol. ii. pp. 99, 143.

[2] Abhandl. u. Beob. d. aerztl. Gesellsch. zu Münster, 1829, vol. i. pp. 118–126.

9. T. Thompson[1] saw a male infant, fifteen months old, who died after an attack of pneumonia followed by pertussis. On opening the abdomen only small intestines could be seen. The whole of the colon was found behind the small intestines, and the sigmoid flexure crossed into the right iliac region over the promontory of the sacrum, and there descended into the pelvis on the right side.

10. H. F. Vickery[2] records a case of a patient who is living to-day and has obtained life insurance without difficulty. There is complete transposition of the viscera. On examination, the heart, liver, and spleen were found to be transposed from their normal positions to the opposite side of the body respectively. On inflation, the stomach was found lying toward the right side instead of the left side, and air injected per anum distended the colon on the right, as if the descending colon were upon that side. The left testicle, as in other men, hung lower on the left side, and he was right-handed.

11. E. E. Maddox[3] records the post-mortem of a male subject. For some inches below the splenic flexure the descending colon occupied its usual position, but thence with an abrupt curve it passed across the abdomen to the right side, and lay in this horizontal part of the course, behind the small intestines and the origin of the mesentery, bound by peritoneum to the aorta and vena cava near the termination of the former. It was then continued into an ample sigmoid flexure in the right iliac fossa, which lay in front of the cæcum, and was invested by peritoneum derived from the covering of that viscus through a mesocolon about two inches wide. The rectum crossed down the right side of the sacrum, and but for this reversal of position bore its normal relation to the peritoneum.

This abnormality must from its nature have been congenital, and differs essentially from the not infrequent displacements of the sigmoid flexure to the right, attributed to the exceptional length of the mesocolon, and in which the descending colon must of necessity lie *in front* of the small intestines, to reach the right iliac fossa. Their occurrence must be viewed as more or less accidental, and due to the extreme license afforded to the sigmoid flexure by the unusual length of its tether.

12, 13. Gruber[4] describes post-mortems of two adult males, in both of whom the sigmoid flexure entered the pelvis on the right side of the promontory of the sacrum. One case died of typhoid and the other of typhus fever.

14. J. Barton[5] reports the following unusual arrangement of the large intestine discovered in the body of an old male in the dissecting-room. The ascending and transverse colon were in their normal position, but their peritoneal attachments were so long that they could be drawn into any region of the abdomen. The descending colon was normal until it reached the level of the second lumbar vertebra. Here it turned across the abdomen, attached to the under surface of the mesentery, to the right iliac fossa; the intestine ran up in the right lumbar region and touched the under surface of the right lobe of the liver; here a short band of

[1] London Medical Gazette, 1836, vol. i. p. 557.
[2] Boston Medical and Surgical Journal, January 18, 1898, p. 34.
[3] Journal of Anatomy and Physiology, London, 1882-83, vol. xvii. p. 408.
[4] Arch. f. path. Anat., etc., Berlin, 1885, vol. cix. p. 497.
[5] Transactions of the Royal Academy of Medicine, Ireland, 1889, vol. vii. p. 392.

adhesion attached it to the liver. It then turned down again to the outer side of the ascending coil into the right iliac fossa, and passed into the pelvis well to its right side, and so on to the anus.

15. W. S. Melsome[1] reports four cases of unusual position of the sigmoid flexure, which are interesting in connection with the case reported. In one of them the rectum was situated in the right side of the pelvis.

16. A. Farenholt,[2] while operating on a cadaver in the Bellevue Hospital Medical School, found the cæcum in the right hypochondriac region, in close proximity to the gall-gladder. The appendix was normal and pointed downward. Both structures were held in their place by the mesentery. The sigmoid flexure occupied the usual position of the cæcum on the right side. There were no peritoneal adhesions present.

17, 18. D. E. Mundell[3] reports two cases in which the sigmoid flexure occupied the right iliac fossa.

In illustrating the operation for appendicitis on the dead subject to the class in operative surgery the following condition was found: the usual site of the cæcum was occupied by the sigmoid flexure, which, passing transversely across the body of the fourth lumbar vertebra, formed a bend in the right iliac fossa, and then ran down into the pelvis on the right side. The cæcum was high in the lumbar region, being on a level with the upper border of the fourth lumbar vertebra.

The next case he met in the dissecting-room. The sigmoid circled the left iliac fossa, lying close behind Poupart's ligament, then ran back along the left margin of the pelvis, across the sacrum to the right side, and then down into the pelvis. No investigation was made as to the situation of the appendix.

*Examples of Other Abnormalities and Malformations of the Intestines.*

J. Abernethy[4] describes an anomalous condition of the intestines in the body of a boy brought to him for dissection. The length of the colon was uncommon; having, as usual, ascended to the right hypochondrium, it was reflected downward even into the pelvis; it then reascended to the left hypochondrium, and afterward pursued its usual course. The duodenum, jejunum, and ileum, when detached from the body and extended, measured only two feet in length, while the extent of the large intestine exceeded four feet. The utmost length of the intestinal tube was little more than six feet, whereas it should have been about twenty-seven feet.

Behm[5] reports a case of an infant in which the autopsy showed a general undeveloped state of the alimentary tract extending from the stomach, which had a capacity of only two drachms, to the descending colon, the lower portion of which was fully developed. The undeveloped portion was so narrowed as barely to admit a small sound throughout its length.

Cabot[6] reports the case of a boy, thirteen years old, who died of per-

[1] Proceedings of the Anatomical Society of Great Britain and Ireland, London, 1993, p. 30.
[2] Boston Medical and Surgical Journal, 1894, vol. cxxxi. p. 427.
[3] Dominion Medical Monthly, Toronto, 1895, vol. v. p. 39.
[4] Philosophical Transactions, London, 1793, pp. 63–65.
[5] Wochen. f. d. Ges. Heilk., Berlin, 1838, vol. iv. p. 698.
[6] Boston Medical and Surgical Journal, 1861, p. 546.

forative appendicitis. The arch of the colon was parallel with the ascending portion, being pushed aside by a soft, resonant, elastic tumor which occupied the left side and centre of the abdomen. This proved to be the wall of a sac formed by a separation of the layers of the mesentery which usually constitute the transverse mesocolon. This contained the greater part of the small intestine, and was evidently congenital, as the mouth of it was two or three inches in diameter, and the margin smooth and rounded. The intestine itself was unchanged. The other organs were normal.

J. Chiene[1] relates a case found in the dissecting-room, in which the duodenum passed upward into the right hypochondrium, and then sweeping downward into the right lumbar region, became continuous with the jejunum without crossing from right to left in front of the aorta. Nineteen feet of coils of small intestine occupied the right and middle regions of the abdomen. The cæcum was not lodged in the right iliac fossa, but lay loose in the cavity of the abdomen. A mesocæcum, five inches broad, directly continuous with the mesentery, passed to the surface of the last lumbar vertebra. The colon, twisted on itself and not subdivided into an ascending and transverse portion, lay to the left of the middle line, and was continuous with the descending colon and sigmoid flexure, which occupied their proper regions.

Also in the case of a female, the cæcum was situated in the right hypochondriac and lumbar regions; the right iliac fossa was covered by the parietal peritoneum, and the ileum passed through it to join the cæcum.

E. Fairland[2] reports the following interesting condition found at autopsy following an unsuccessful left lumbar colotomy: A bifurcation of the intestine commencing one and one-half inches from the pylorus. One portion, which was probably the small intestine, ended in a blind pouch. The other portion was of smaller diameter, also ending in a blind sac from which sprang a rudimentary vermiform appendix and a pipe-like portion of gut terminating at the cul-de-sac forming the rectum.

W. Gruber[3] describes five cases of anomalous position of the intestines, in one of which the descending colon crossed the vertebral column obliquely, then turning again in its axis, recrossed in the opposite direction, and the sigmoid and rectum entered the pelvis in the normal position.

In another place he reports[4] a case of fixation of the descending colon by means of a broad mesocolon in front of the lumbar vertebræ, the upper part of the sigmoid being in front of the sacrum.

Hurd[5] reports a case of imperforate anus. The sigmoid flexure opened into the prostatic portion of the urethra. The child lived fifteen months, feces passing through the urethra. Such cases seem to be a reversion to a primitive type of vertebrate life.

J. Reid[6] has contributed a very valuable paper on the subject, and reports a case of an individual who died of some thoracic disease. Autopsy showed the caput cæcum was placed in the upper part of the

[1] Journal of Anatomy and Physiology, London, 1867-68, vol. ii. pp. 14-18.
[2] British Medical Journal, 1879, vol. i. p. 851.
[3] Arch. f. path. Anat., etc., Berlin, 1865, vol. xxxii. p. 94.
[4] Oesterr. Zeitschr. f. prakt. Heilk., Wien, 1865, vol. xi. p. 269.
[5] Boston Medical and Surgical Journal, 1885, vol. cxiii. p. 294.
[6] Edinburgh Medical and Surgical Journal, 1836, vol. xlvi. pp. 70-74.

left lumbar region; the colon first passed through the left lumbar region to the lower part of the left iliac fossa, it then turned up again to the left lumbar region, the ascending portion lying internal to and nearly in close apposition with the descending portion; in the left lumbar region it again formed an acute angle and again traversed the left lumbar region and left iliac fossa, close to and internal to the ascending portion, and then passing over the sacro-iliac synchondrosis it terminated as usual in the rectum.

He also mentions another case in which coils of large intestine with sharp flexures occupied the left lumbar region. At one of these angles there was an obstruction from which the patient died. The malposition in both cases was the original formation of the parts and not the effect of disease or any other agency.

In the same paper Dr. Reid comments as follows:

"Beside the cases of transposition of the whole of the viscera, various irregularities in the position of the large intestines are mentioned by practical authors and by those engaged in elucidating the development of the fœtus; some of these undoubtedly arising from original conformation, and others from disease. The most common of the former of these seems to depend upon the unusual length of the intestine, particularly of the transverse arch of the colon." He quotes Morgagni and Annesley as giving examples, also Dr. Wells[1] and Geoffroy-Saint-Hilaire. Reid goes on to say that the caput cæcum maybe placed higher than usual so as to lie in the right lumbar region or toward the umbilicus. Annesley gives one case in which the caput was found in the middle of the pelvis. The body was that of a female, who had died of pleurisy, in whom the caput cæcum was placed loose in the lower part of the pelvis, and the ascending colon was firmly fixed by the peritoneum in the right iliac fossa. The sigmoid flexure, after passing into the pelvis, turned upon itself at an acute angle, and re-entered the left iliac region, about the middle part of which it formed an acute angle and returned to the pelvis. All the abdominal viscera were quite healthy.

He goes on to say that in connection with the high position of the cæcum we may have the colon passing from the umbilical region down the centre of the abdomen, to terminate in the rectum. These are the more interesting, as they approach nearly to the position which the large intestine occupies in the first months of fœtal development.

Meckel[2] has ascertained that in the early months of utero-gestation the colon does not consist of ascending, transverse, and descending portions, as in the adult, but is nearly straight, and that it is only toward the end of the fourth month that the caput cæcum reaches the right lumbar region.

According to Serres, the position of the caput cæcum in the right iliac fossa is intimately connected with the descent of the testicle in the male and that of the ovary in the female. In those cases where the descent of the testicle has been arrested he has found that of the cæcum also arrested. According to Meckel, the descending colon describes a larger curvature in the left iliac fossa in the fœtus during the latter months of utero-gestation, so that its appearance in the adult is only the continuance of the arrangement peculiar to the fœtus at that period.

[1] Transactions of the Society for Improving Medical and Surgical Knowledge, vol. iii.

[2] Manuel d'Anatomie Générale, Descriptive, etc., tome ii.

Though many of the abnormal appearances in the adult can be beautifully and most satisfactorily accounted for by the arrestment of the development, yet there are others which as yet cannot be thus explained.

W. Turner[1] reports two cases of malposition of the cæcum:

1. Adult male. The cæcum occupied the right lumbar and hypochondriac regions. It was loosely attached by an extensive mesentery, which allowed it to be thrown across to the left of the median line. It passed immediately into the transverse colon; there being no ascending colon, its place was occupied by the terminal end of the ileum.

2. Aged female. The cæcum was misplaced downward, resting on the floor of the pelvis. Owing to this position, the lower end of the ileum also entered the pelvis and passed to the right side of that cavity to join the large intestine. The cæcum and as much of the ascending colon (about two inches) as was placed in the pelvis were completely surrounded by peritoneum, so that they possessed considerable mobility, and could be thrown over to the left of the pelvis, or even drawn upward into the cavity of the abdomen proper. In this case the development, instead of being arrested, was excessive, the cæcum and ascending colon passing through their proper regions to one beyond.

This case is of particular interest in connection with the case which I have here reported, in which, it will be remembered, there was an overdevelopment of the cæcum, as shown by its occupying the true pelvis.

J. M. Alexander.[2] Case of double colon in a boy, aged eight years. This case proves to be not a true double colon, as the title implies, but a reduplication of the colon upon itself by a sharp flexion at the position of the sigmoid, ascending to the right of the descending colon eleven inches, and descending again to the right and joining the rectum. The whole colon measured six feet.

A. Buchanan[3] remarks that the colon is more subject than any other part of the intestinal canal to vary in length and in mode of disposition.

Upward of twenty examples of such variations will be found recorded in the works of Morgagni. The most common of these variations is that observed in the transverse arch of the colon, which, instead of running straight from right to left immediately under the liver and stomach, is inverted downward, so as to reach the umbilicus or even the urinary bladder. He goes on to cite various cases from Morgagni, among which was one in which the colon, after observing its usual course as far as the stomach, passed thence right down to the sacrum in front of the small bowels. Instances are not infrequent of the sigmoid portion of the colon deviating from its usual course. It sometimes passes from the left groin across the fundus of the bladder to the right groin, and thence, ascending and turning to the left, it goes over the top of the sacrum to form the rectum. A case is quoted from Morgagni in which the sigmoid flexure of the colon lay almost completely in the umbilical region of the abdomen. The following variety escaped the notice of Morgagni. The author states that it is rare in Italy, but may be more common among the inhabitants of the British Isles. Within a period of seventeen years he had observed several examples of this

[1] Edinburgh Medical Journal, 1863-64, vol. ix. pp. 110-16.
[2] Cincinnati Lancet and Clinic, 1880, N. S., vol. iv. p. 511.
[3] London Medical Gazette, 1839, vol. ii. p. 689.

variety in Scotland. The first case he saw in 1891; Dr. Hunter observed a similar case in 1831. (Case of right-sided sigmoid flexure already quoted.)

In another remarkable case, the colon, crossing from the left to the right groin, ascended parallel to the right colon, and then, turning to the left, descended near the mesial line of the body into the pelvis. Of the deviations from the usual conformation of the colon described above, those occurring at the proximal or middle portions of the intestine do not appear to be productive of any disease or inconvenience to the individuals so constituted. On the other hand, the deviations which occur at the distal extremity of the colon have been, in several instances, found to accompany a very severe disease which doubtless is produced by the faulty conformation. He relates a case, aged forty or fifty years, which died of obstruction with enormous distention. All kinds of purgatives had been used in vain. At autopsy the colon was found to observe its usual course until it reached the left iliac region, when it made a sweep to the right, passing behind the portio and returning across the lowermost lumbar vertebra; it then ascended until it came in contact with the transverse arch, when, turning to the right, it descended to the sacrum. The obstruction had taken place at the promontory of the sacrum, where the beginning sigmoid was pressed between the overlying fold of colon and the promontory. The second case was a female of forty years, of costive habit. Nine days previous to her admission to the hospital nothing had passed from the bowel, and the obstruction continued until her death, five days later. Autopsy showed an enormously distended colon. It followed its usual course to the left iliac fossa, and then ascended as high as the transverse arch, and, turning to the right, descended nearly in the middle of the line of the belly to form the rectum. There was also an incurvation downward of the right half of the transverse arch. At the termination of the colon in the rectum the intestine was observed to be twisted from left to right, and this was the cause of the obstruction.

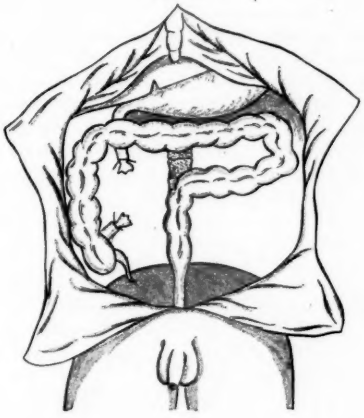
The third case was one of right-sided sigmoid flexion, already quoted.

In a subsequent paper[1] he reviews the subject of obstruction of the bowels the result of congenital or anomalous displacement of the colon, and adds two more cases from the literature of the subject. The first occurs in the *Sepulchretum Anatomicum* of Bonetus, the father of pathological anatomy, and we may, therefore, add of rational medicine. It is extracted from the observations of Tidicæus, who flourished in the end of the sixteenth century. (Fig. 3.) A pregnant woman, who was a seamstress and worked daily from early dawn until late at night, became so constipated that just before her confinement she had not had a passage from the bowels for twenty days. Nothing relieved the incredible pain and swelling of her belly. Labor at length came on, and she was delivered of an immature, but living child. Notwithstanding the expulsion of the fœtus, the belly did not in the least diminish in size. The bystanders thought that the belly would burst on account of the excessive tension. She died soon after her labor, and the autopsy showed the colon enormously distended with excrement and wind. The colon at that part where it descends from the left kidney turned to the right as far as the region of the umbilicus, under which, and situated between

[1] London Medical Gazette, April 17, 1840, p. 143.

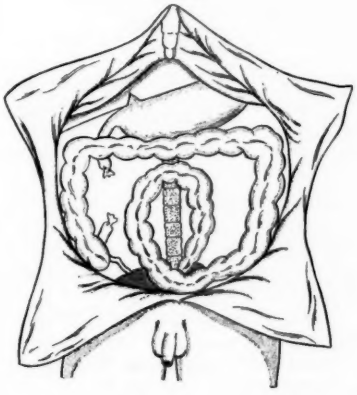
the tracts of the recti muscles, it was seen descending in the middle of the belly, in a straight line from the stomach. A twist in the lower part of the colon had taken place where it is continuous with the rectum,

FIG. 3.



thus causing the obstruction. Buchanan thinks that the obstruction was not due to the twist, but to the unusual position of the colon, lying between the promontory of the sacrum and the gravid uterus.

FIG. 4.



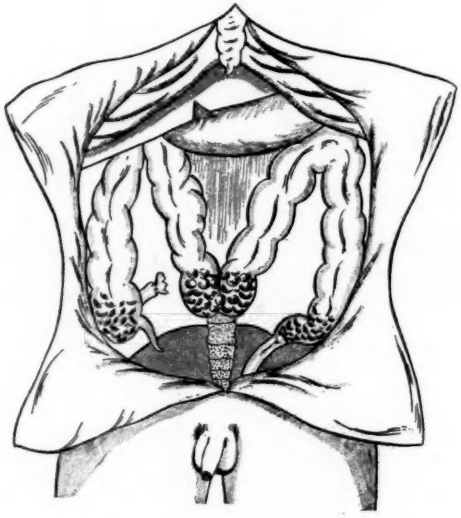
The other case was observed by Abercrombie,[1] of Edinburgh, in 1815. A man, aged sixty years, died of obstruction of the bowels. He had suffered twice with similar attacks. The sigmoid flexure crossed to the

[1] Edinburgh Med. and Surg. Journal, vol. xvi. p. 15.

right and in front of the bladder, then ascended toward the umbilical region, then, turning sharply to the left, descended beneath the first section of the sigmoid into the pelvis. The obstruction occurred at this point. (Fig. 4.)

C. F. Dressel[1] reports the case of a girl, nineteen years old, who died after great suffering from obstruction. The colon was enormously distended. The first portion of the transverse colon descended as far as the uterus, and then the second portion ascended again to the left hypochondrium, where it joined the first portion of the descending colon. The caput coli, the dependent loop of the transverse colon, and the sigmoid flexure were filled with masses of hard excrementitious matter, thus producing the obstruction. (Fig. 5.)

FIG. 5.



Esquirol[2] reports a case in which the transverse colon, after making a sharp curve in the right hypochondrium, descended perpendicularly in the middle line and entered the pelvis directly behind the pubis. The patient was an insane woman, aged twenty-eight years, who died from obstruction of the bowels.

D. S. Fiske.[3] A case of an infant who died with imperforate anus. The child had been operated upon when twenty-four hours old, and died in a few hours. The colon, after running through its usual course to the left iliac fossa, formed the sigmoid flexure. From this point it passed into the pelvic cavity, and, ascending again, terminated in the pelvis of the right kidney, thus occupying the place of the ureter. The calibre

[1] Journ. de Chir. und Augenh., Berlin, 1833, vol. xix. pp. 664-668.
[2] Journ. Gén. de Méd. Chir. et Pharm., Paris, 1818, vol. lxii. p. 341.
[3] Northern Lancet, Plattsburg, N. Y , 1853, vol. vii. p. 85.

of the intestine was not in the least diminished to the very point of attachment in the kidney.

J. Malden.[1] An adult female, died of ileus. The transverse colon descended from the right hypochondriac region to the right iliac, and then ascended again to the left hypochondriac region, whence it pursued its usual course.

H. Smith.[2] An infant died with imperforate anus. The colon was much inflated. It passed up on the right, and making a short turn across the umbilical region, terminated in a smooth rounded extremity or blind sac. There was a well-formed caput coli, but no appendix vermiformis. The small intestines were healthy and perfect.

The sigmoid flexure and rectum seemed not to have been formed, but upon examining the pelvis there appeared a tortuous gut not larger than a swan's quill, which could be traced along the left side of the spinal column, and which, passing through the pelvis, terminated in the anus.

W. Walters.[3] The first born of twins died ninety-eight hours after birth. The surviving twin-sister was healthy, without any defect or malformation. At autopsy the left metacarpal bone and phalanges of the thumb were entirely absent, and the hand was bent upward upon the wrist at a right angle.

Six inches below the cæcum the colon terminated in a cul-de-sac. The terminating point of the colon was a little below the commencement of its transverse portion, and adjacent to this point it was found again commencing in a cul-de-sac, and extending thence uninterruptedly several inches to the sigmoid flexure. The whole extent of this portion was contracted almost to a cord, and was entirely empty. The rectum was also empty and contracted in its upper portion.

N. Dayabhai[4] relates a case found at autopsy, in which the descending colon crossed obliquely downward from the splenic flexure to the caput coli in the right iliac fossa. From this point it turned straight across over the promontory of the sacrum to the left iliac region. Here it formed the sigmoid, which entered the pelvis normally.

The normal course of development of the intestines has been described by Professor Flower,[5] and also by Professor Cleland.[6] He says that a peritonitis occurring in fœtal life by the formation of temporary or permanent adhesions could so modify development as to give rise to almost any deformity, arrest of development, or anomalous position. Old scars of the peritoneum are frequently found in these anomalous cases, and occasionally the bands and adhesions persist, as in a case reported by R. B. Young.[7]

B. Robinson,[8] in an article entitled "Unusual Cæca in One Hundred and Thirty Autopsies," says: "The most impressive, unusual cæca are the excessively developed ones which lie on the pelvic floor or are turned toward the middle of the abdomen."

[1] Midland Medical and Surgical Reporter, Worcester, 1828-29, vol. i. p. 53.
[2] London Medical Gazette, 1840, vol i. p. 789.
[3] Medical Examiner, Philadelphia, 1855, vol xi. p. 724.
[4] Indian Medical Record, Calcutta, 1893, vol. iv. p. 286.
[5] Medical Times and Gazette, 1872, vol i. p. 291.
[6] Journal of Anatomy and Physiology, May, 1868; May, 1870; April, 1883.
[7] Ibid., London, 1884-85, vol. xix. p. 98.
[8] Gaillard's Medical Journal, New York, 1895, vol. lxi. p. 98.

# TWO ATTACKS OF TEMPORARY HEMIPLEGIA OCCURRING IN THE SAME INDIVIDUAL AS THE RESULT OF THE USE OF PEROXIDE OF HYDROGEN IN A SACCULATED EMPYEMA (PLEURAL).

By E. G. Janeway, M.D.,
NEW YORK.

The following history of the development of two attacks of hemiplegia of temporary duration as the result of the use of peroxide of hydrogen in the sac of an empyema will, I trust, prove of interest as well as serve as warning:

Mr. B., forty-one years of age, a right-handed writer, was referred to me by Dr. Axtelle, of Waterbury, Conn. Two years previously he had developed a pleurisy on the left side, which had been aspirated. One and one-half years after this event a swelling developed in the left lumbar region, which bulged when he coughed. This Dr. Axtelle had incised four months preceding his visit to me, and found that it communicated with a sacculated empyema at the base of the left lung. After this the patient had used peroxide of hydrogen to irrigate the sac. On November 25th, three and a half months after the operation, two minutes after the injection of a wineglassful of the peroxide, as he noticed it to bubble inside, he felt very queer and, according to his wife, became unconscious for a second, and of a pale-greenish color. Immediately he found that his right arm and leg were numb and powerless. He did not lose the power of speech. This loss of power of the right arm, which was complete, and of the right leg, which was almost so, lasted for twenty-five minutes, and then passed away completely. After this he described himself as having felt as well as ever, except that he had been frightened by the occurrence.

Three days after this first attack he had an exactly similar seizure, except that he lost power in his neck also, his head dropped, and he had difficulty in breathing. The paralysis of the right arm and leg was again complete, and lasted as before—twenty-five minutes. On questioning, the fact was elicited that the sinus had so far closed that no air or fluid escaped after the introduction of the peroxide.

I examined Mr. B. sixteen days after the first of these spells. He then presented the healing incision and sinus in the left lumbar region. The physical signs on the left side were few and only to be made out by careful examination. There was some dulness in the lower part of the thorax; on auscultation the respiratory murmur was feebler than on the right side. Only by the ear could adventitious sounds be heard over the above-described area near the vertebral column. Neither with the binaural stethoscope nor with the phonendoscope could they be elicited. These consisted in rather large liquid râles occurring during the act of coughing or during an inspiration following several short acts of coughing.

This is an illustration, to digress for a moment, of the fact of not infrequent occurrence, that those who trust alone to auscultation by

means of stethoscopes are liable to overlook or miss those indications of disease which are produced beneath the layer of normal, or nearly normal, lung tissue. On many occasions I have been able to detect a central pneumonia earlier by immediate than by mediate auscultation.

But to return to the thread of our story. At the time of the second examination, six days after the first, these phenomena had disappeared; only the slight dulness and the feeble respiratory murmur remained. On the occasion of this second visit the patient said that the discharge had ceased, and he felt that there was no accumulation within.

In this connection it may be of interest to recall to the members the case published by Leudet. This will be found with other cases of nervous phenomena developed in the course of an empyema, or more especially of lavage of the sac of an empyema, in the work of L. Bonveret on empyema, published in Paris in 1888. He has collected a series of cases which he has grouped under the head of embolic, slow paralytic, syncopal, and convulsive, following empyema, or more especially lavage of the sac, or the introduction of a tube in the sinus. This and the following are similar in most respects to the one whose history I have detailed.

Briefly, the facts of this case were: that a young man, twenty-one years of age, had a pleurisy of the left side, filling the pleural sac in ten days. At the end of a week two litres of serum were removed by thoracocentesis. Three days later a pleuro-bronchial fistula gave exit to a great quantity of pus. Four days after this a new thoracocentesis gave exit to a litre of cloudy and opaque liquid. At the end of four months an incision into the pleura was made and the sac was regularly washed with a solution of iodine. Gradually the sac diminished, and on several occasions it was necessary to dilate the fistulous tract. Thirteen months after the operation for empyema, while his mother, as she had been accustomed for a long time, washed the sac with a solution of iodine, having first introduced a new tube for one which had long remained in the fistula, the young man was suddenly seized with a general malaise, a sensation of numbness in the right side of the body, and an impossibility of speaking. The consciousness was not lost, and there was no convulsive movement. He knew that he could neither move a finger nor limb of the right side. Gradually the power of motion returned. Two months later a similar attack, though lighter, occurred. A third happened when the physician was himself washing out the cavity, which had become so retracted that it would hardly hold two-thirds of a wineglass of liquid. The physician essayed to measure the size of the sac by pouring in water. A resistance was experienced, and the tube was pushed out by the liquid. The patient rose, staggered, and his speech became embarrassed. He was placed in a horizontal position, with a pale face, the right hand and leg paralyzed, without power of speech. After fifteen minutes the speech returned, and a few moments later the power of movement of the right side. After this irrigations were continued for a year without further nervous accident.

So also this case, which was reported by Dr. L. Forgues, surgeon in the French Army, in the *Archives de Médecine et Pharmacie Militaires*, Paris, 1894, vol. xxiv., has somewhat similar features:

A soldier, twenty-two years of age, was admitted to the hospital, December 5, 1891, with broncho-pneumonia. Seven weeks later the beginning of pleurisy is noted, and twenty days afterward 700 grammes of pus were removed by aspiration. The operation for empyema of the left side after two days gave exit to 1300 grammes of pus. Daily lavage of the sac was performed at first, but afterward according to the requirements of the case. About three months after the operation, during the giving of a lavage, the surgeon being engaged in retaining the drainage-tube, which was very short and had given pain by pressure on the border of the wound, the patient suddenly lost consciousness, having a pale face, a cadaveric look, largely open eyes, and dilated pupils. The heart-beat and the respiration were suspended and the general sensibility was abolished. No convulsions nor contractions occurred. After the use of cold flagellation the heart's action and the respiration returned in about a minute. The patient had a vague expression for some moments, then recognized people around him, but had no knowledge of what had occurred. Four or five minutes later it was found that the right arm and leg were paralyzed. After twenty-five minutes power returned in the right leg, but it was three hours before the right arm could be used. Lavage was abandoned after this. On two occasions in the subsequent history the fistulous tract closed, but owing to accumulation of pus in the sac had to be reopened. The man finally recovered without another paralytic attack. In this case, as in the one which I have brought to your notice, though the hemiplegia was on the right side, there was no aphasia.

For attacks such as the three to which your attention has been drawn the most natural explanation would be to suppose that something had passed into the circulation and had produced an anæmia of the left side of the brain, or, more properly speaking, of a portion of this area. If we extend the study, however, and include those cases in which convulsions have also occurred, these have in certain cases been considered to be dependent on embolism, but a difficulty has been encountered in the cases which terminated fatally, and after careful search no satisfactory evidence of embolism has been found at the autopsy.

So far as a rather hasty examination of the literature is concerned, the three cases here recited are the only ones obtainable in which collapse and temporary hemiplegia have been the sole phenomena. In view of the fact above mentioned, that embolism could not be proven, the theory has been advanced that such seizures as had collapsed with subsequent convulsive attacks—the pleuritic epilepsy of some writers—could best be explained by invoking reflex action, and by supposing that a contraction of the cerebral arteries or an inhibition or excitation of the cerebral cortex was the occasion of the untoward nervous phenomena, with the additional explanation that in cases in which paral-

ysis existed afterward hemorrhages had occurred. But such explanation will not avail for the three cases here narrated — hemiplegia following or, more rightly, associated with collapse. It is a little singular that in these three cases, all with right hemiplegia, only one had aphasia. Hence, under the reflex theory, a narrower area of arterial spasm or cerebral inhibition must have been involved in two cases than in the case of Leudet. The idea which has been formulated, that intoxication is responsible for such conditions, would not be tenable so far as peroxide is concerned, nor does a study of the others enable one to be satisfied with such a theory.

To my mind, the phenomena are best explained by supposing the hemiplegia to be due to an embolism, but of such a nature as to soon disappear. The only substance capable of thus acting would be either air or gas. In the case which I have narrated, as in the others, the attack has occurred when the conditions were such as to produce some pressure within the sac; by liberation of oxygen from peroxide in this case; by measuring size of sac, Leudet, once; by change of tube with lavage, Leudet, once, and, case of Dr. Forgues, of pressure to hold tube in place with lavage. The question which has occurred to me is, Do not the events point toward the possibility that under the conditions air or gas may have found entrance into the radicals of the pulmonary veins through stretched or torn granulation tissue, helped by a forcible inspiration at the time of the accident? Air embolism barely possible, oxygen embolism may be the solution which we seek to explain these cases. Oxygen could only be the agent when peroxide had been used, as in the case recorded. It can, of course, be objected that air, and more particularly oxygen, would either be rapidly absorbed or else kill by its accumulation in the heart. We are, however, concerned in these cases about too small an amount to bring about the latter result. It may be well to remind the adherents of the reflex theory that in the case recorded by Leudet the lavage was continued for a year after the last attack without recurrence. We may well ask what has become of the sensitive nerve so susceptible in provoking reflex.

As regards collapse alone, it is possible that it can be produced as the result of a reflex influence. It seems to me that a careful examination of the history of certain convulsive cases, especially those followed by, or rather associated with, hemiplegia or paralysis, strongly suggests something sent by the circulation to the brain, possibly some of the injection fluid or pleural contents by the aspiration influence, causing capillary embolism.

Shortly after meeting this case I found an article by Prof. Lewin in the fortieth volume of the *Archiv für experimental Pathologie und Pharmacologie*, entitled, "About the Penetration of Air from the Bladder into the Heart and the Path of its Passage."

Prof. Lewin, in this article, describes experiments on animals in which death was produced by injecting air into the urinary bladder, thus producing air emboli. The air entered the venous system through the pelvis of the kidney, and was observed in the vena cava and aorta by means of a laparotomy previously performed. The air could also be heard to enter the renal vein and be made out in the heart during its continued activity following the death of the animal. Prof. Lewin thinks that the air penetrates preferably by the lymphatics into the vein by preformed paths, not necessarily through torn openings.

Such a case is suggestive in connection with the theory which has occupied us.

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## GASTRIC SYPHILIS, WITH THE REPORT OF A CASE OF PERFORATING SYPHLITIC ULCER OF THE STOMACH.

By Simon Flexner, M.D.,
of Baltimore.

(*From the Pathological Laboratory of the Johns Hopkins University and Hospital.*)

Chiari opens his paper on "Gastric Syphilis," contributed to Virchow's *Festschrift* in 1891, with the following remarks: "Although we are to-day sufficiently informed of the pathological changes caused by syphilis in most of the organs of the human body, and, thanks to the famous investigations of Virchow, we are able, in spite of our ignorance of the specific syphilitic virus, to identify the anatomical lesions of the disease, yet there are a few organs respecting which our knowledge of their syphilitic affections is not at all complete. To these latter organs belongs the stomach."

Chiari,[1] in his critical review of the reported cases of syphilis of the stomach up to the time of his publication, accepts as conclusive only those of Klebs, Cornil and Ranvier, Weichselbaum, and Birch-Hirschfeld. I shall follow Chiari in accepting these and rejecting the other reported instances, with the exception of Wagner's case, and I shall find in the meagre literature of the subject, especially in the English language, justification for the publication of the report of the present instance.

The case reported by Klebs[2] occurred in a man who showed at the autopsy, besides an ulcer of the stomach, numerous ulcers and cicatrices of the skin, fresh ulcers of the pharynx, gummata of the lungs and liver, and ulcerating gummata of the intestine. He describes the gastric lesion somewhat as follows: The ulcer was situated on the pos-

[1] Ueber Magensyphilis. Festschrift, Rudolph Virchow, 1891, ii. 297.
[2] Handbuch der pathologischen Anatomie, 1869, i. 269.

terior wall near the lesser curvature, two inches from the cardia. The mucous membrane was the seat of a circular erosion the size of a franc-piece, which resembled strongly similar ulcerations of the base of the tongue. The remaining tissues of the stomach were thickened in this place; the serosa especially showed a sharply-circumscribed, smooth, tendon-like thickening, which, in the region of the base of the ulcer, presented a variegated yellow appearance. The diagnosis was confirmed by microscopical examination.

Cornil and Ranveir[1] report the case of a woman, aged thirty-nine years, in whom gummata were found in the liver and stomach. There existed in the stomach several flat tumors, occupying the lesser curvature in the region of the pylorus. These were about 5 cm. in width and 12 mm. in depth, and the infiltration, having the characters of gumma, involved the mucous membrane, submucosa, muscularis, and even the serosa, which was thickened.

The case of Weichselbaum[2] was in a man, aged twenty-five years. The immediate cause of death was erysipelas. Syphilitic lesions existed in the cranium, nose, pharynx, larynx, liver, and stomach. The stomach exhibited a contracted cicatrix and two ulcers. The latter were on the posterior wall, above the greater curvature, and their bases were composed of cicatricial tissue. It is probable, but not certain, that the ulcers and cicatrix had originated in gummata.

Birch-Hirschfeld[3] has encountered four cases. They are as follows:

One was a woman, aged forty-five years. The syphilitic infection dated from six years before her death; for four years she had suffered from gastric symptoms. At the autopsy were found (1) a gumma of the liver the size of the fist, (2) in the anterior wall of the stomach, near the pylorus, an oval, yellow, firm plaque, 8 cm. long, showing slight ulceration. The base and edges consisted of firm cicatricial tissues, and the infiltration occupied mucosa and submucosa. The bloodvessels were obliterated.

The second case was a man who exhibited gummata of the lymph-glands, jejunum, and stomach. The last was of the nature of an ulcer, situated at the cardia, the edges of which were dense and gummatous, the base clean.

The third instance was a male, aged thirty-five years, infected four years previously, in whom were found gummata in the bronchial and mediastinal glands and small intestine, cicatrices in the liver, and an ulcer, showing gummatous edges, affecting the lower end of the œsophagus and extending into the stomach. These three cases occurred in adults, presumably in all in consequence of acquired syphilis.

[1] Manuel d'Histologie pathologique, 1884, ii. 296.
[2] Syphilitisches Geschwurs im Magen. Ber. d. Rudolfsspitales in Wien, 1883, 333.
[3] Lehrbuch d. patholog. Anatomie, 1887, ii. 518, 537, 589.

The fourth case of Birch-Hirschfeld was congenital in origin, and was a newly-born child which presented lesions of skin-syphilis and gummata in the liver and lungs. The pars pylorica ventriculi contained an elevated infiltration the size of the palm of the hand, white in color, and of firm consistence, consisting of a granulation tissue developed in the submucosa and mucosa. The granulation tissue was rich in epithelioid cells and contained bloodvessels with thickened walls. Birch-Hirschfeld is of the opinion that the tumor was syphilitic in origin.

Chiari[1] paid especial attention to the occurrence of gastric syphilis, and in 243 cases, which showed at autopsy anatomical lesions of syphilis, he found two of undoubted gastric lues. The 243 cases included 145 of hereditary and 98 of acquired origin. One of the cases of gastric syphilis was of the inherited and the other of the acquired form.

The case of acquired syphilis occurred in a man, aged twenty-three years. The clinical diagnosis was tuberculosis pulmonum, syphilis, and gastro-enteritis catarrhalis. The luetic infection dated from two years ante mortem. During the last year of life the patient had passed through an attack of syphilitic iritis and had had severe gastric symptoms. There was a large cicatrix on the glans penis. Gummata were present in the right lung, liver, kidneys, and intestines. The lung (right) and intestines showed lesions of tuberculosis. In both situations they were distinguishable from the syphilitic lesions. The *stomach* showed a chronic catarrhal condition in the region of the pars pylorica. In the region of the posterior wall, occupying the right side, and extending from the lesser to the greater curvature, there existed an almost circular loss of substance, 10 cm. in extent, that gave the impression of a peptic ulcer. The ulcer had perforated the coats of the stomach in its central part, which was prevented from communicating with the peritoneal cavity by adhesions with the pancreas, the transverse mesocolon, and the lower part of the duodenum. Other infiltrated areas existed on the anterior wall near its middle. These projected above the surface and, upon microscopical examination, they agreed with the syphilitic plaques in the intestine, with each other, and with the thickened edges of the ulcer. They are to be regarded as gummatous infiltrations, of which one had become ulcerated.

The instance of hereditary syphilis was in a boy, aged three weeks.[2] There were macular-vesicular exanthem, pneumonia alba, gummatous cholangitis and cholecystitis, gummatous plaques of the small intestine, osteochondritis syphilitica, and elevated plaques in the stomach. The

[1] Op. cit.

[2] Lues hereditaria mit gummoser Erkrankung des gall-aleitenden Apparates und des Magens. Prager medic. Wochenschrift, 1885, p. 47.

general gastric mucous membrane was slightly injected; at several points it was thickened, pale yellow in color, remarkably smooth, and protuberant. The thickening involved all the tissues, which, on section, presented a uniform fibroid character. In some of the plaques central ulcerations existed. In all, five such growths were discovered. The microscopical examination showed a granulomatous tissue spreading from the submucosa into the other coats. A thick infiltration about the bloodvessels was noted. Necrosis was absent; but the structure of the gastric plaques agreed with the corresponding formations in the intestine and the nodules in the liver.

The next three reported cases are of the inherited form, and also emanate from Chiari's laboratory. Bittner[1] describes these cases, which arose within the period of one year. The first was a male child, which lived two and one-half hours. The anatomical diagnosis is given as pneumonia alba, chronic splenic tumor, osteochondritis syphilitica, and gummata of the liver, intestine, and stomach. In the last organ there were several discrete plaques occupying the anterior wall. These structures consisted of a granulomatous tissue, in which large, round spindle-cells were found, which originated in the submucosa and extended into the mucous membrane. The second was a fœtus of the sixth month. In it were found pemphigus, gummata in both lungs and in the liver, osteochondritis syphilitica, plaques in the small intestine, and a superficially ulcerated, infiltrated focus, the size of a pea, in the stomach, which had all the characteristics of gumma. The third case was a still-born fœtus. The liver and adrenals contained gummata, and the stomach thickened areas which, upon microscopical examination, presented the appearance of syphilitic granulation tissue developed especially in the submucosa and mucous membrane.

From 1893 to 1896 there appears to be a complete break in the literature of this subject. In this year appeared Stolper's[2] monograph on visceral syphilis, in which he describes a case of gastric syphilis. This case came to autopsy in the Pathological Institute in Breslau, and was the only instance of syphilitic affection of this organ in 86 cases (25 inherited, 61 acquired) of anatomical syphilis which had been examined post mortem in the institute during three years (1892–1895). It was an example of acquired lues.

The case was a man, aged forty-three years. The anatomical diagnosis was inveterate syphilis; cicatrices on penis; chronic fibroid pneumonia, purulent bronchitis and bronchiectasis; cicatricial stenosis of trachea and larynx; atrophy at base of tongue; chronic and acute lymphadenitis; lobulated liver; ulcerated gummata of stomach.

[1] Zur Kenntniss der gummösen Magensyphilis. Prager med. Woch., 1893, xviii. 581.

[2] Beiträge zur Syphilis Visceralis (Magen, Lungen, Herzsyphilis). Bibliotheca Medica, 1896, C. Heft 6.

The stomach was not dilated, and the general mucous membrane was free from thickening. The posterior wall of the organ showed an elevated area of elongated form, consisting of two converging bands which ran in its long axis. These could be covered by two fingers, and in the more elevated places they were the seat of pigmentation and multiple small ulcerations. These "convolutions" gradually became incorporated with the mucosa of normal thickness. The superior one measured 5 cm., the inferior about 10 cm. in length. The peritoneal coat was not thickened over the bands. On section the submucosa appeared greatly thickened, the mucosa in the region of the ulcers was destroyed, and elsewhere was invaded by the submucous infiltration. The microscopical examination showed the pathological process to be located chiefly in the submucosa, and the necrosis and ulceration of the mucous membrane to be the result of the obliteration of bloodvessels passing to it. The new tissue differed from that described by other writers in that it was dense, contained few stainable cells and nuclei, presented in some places a fibrillated myxomatous, and in others a definite necrotic appearance. The diagnosis is regarded as certain, because of the other typical syphilitic lesions in the body, and also because of the peculiar structure of the gastric lesion.

The doubtful example of Wagner[1] was of the acquired form, and was found in a man, aged fifty-eight years, in whom there was also noted syphilitic papilloma of the larynx. The gastric lesions consisted of three elevated and infiltrated foci, the largest being situated on the posterior wall of the stomach a short distance from the pylorus. The lesions were regarded by Wagner as syphilitic, although the microscopical appearances are not given by him. This review contains the authentic cases of syphilitic lesions of the stomach which I have been able to find in the literature. It covers fourteen cases, of which number five were of the inherited, and nine of the acquired form. From it it will be seen that no instance of the disease has been recorded by writers in the English language; indeed, the *Proceedings of the London Pathological Society* do not contain a single reference to such a disease. Further, with one exception, that of Cornil and Ranvier, the entire literature is German.

The case which I have to report is that of a male, aged fifty-two years, whose illness extended over a period of three years. The man was a patient of Dr. Irving Miller, of Baltimore, to whom I am indebted for the main clinical history and for the privilege to do the autopsy. He was in the hospital on two occasions, but only remained to be examined; he was not treated there. Dr. Miller writes: "I first saw the patient in August, 1892. At that time he was a large, fairly well-nourished man, about six feet in height, and weighing 170 pounds.

[1] Das Syphilom, Arch. d. Heilkunde, 1863, iv. 225.

His average weight was 200 pounds. His occupation was that of a showman. The first appearance of his illness was the preceding Christmas, while filling an engagement in Boston, and followed a drinking-bout and exposure. It was ushered in by a severe spell of vomiting, which persisted for several days, and was followed by irregular chills. This condition of affairs continued off and on until the summer, when I first saw him. At this time the temperature ranged around 101° F.; there was a tumor in the splenic region extending 9 cm. below the costal margin and forward nearly to the umbilicus. Exquisite tenderness was present all over the area of dulness. I regarded the tumor as being the enlarged spleen. The urine contained bile-pigment, and there was some pigmentation of the skin. Neither sugar nor albumin was found in the urine. There was little change in the conditions noted for several months, when the splenic tumor was found to have diminished markedly and ascites to have appeared. The dropsy increased, involving the legs and scrotum. The patient was tapped for the first time on April 20, 1893; three and one-half gallons of fluid were withdrawn. The tapping was repeated at intervals of six days to two weeks, the amount of fluid withdrawn varying from two to six gallons. The relief afforded by the paracentesis was so great that the operation was resorted to to enable the patient to go fishing the next day. The accumulation of fluid continued for two years, and then began to diminish until very little fluid could be detected in the abdomen. Purges were occasionally administered. The morphine habit was acquired. The night before his death the patient dined abundantly on fried crabs and ice-cream. When I saw him, a few hours before his death, there were intense abdominal pain and tympanites. Pulse thready, weak, 130 to the minute; profuse sweating. He died in the early morning." The patient had been in the hospital on two occasions, in February, 1893, and March, 1894, for examination. On his first entrance Dr. Hewetson found a full abdomen; no increase of liver dulness; the spleen enlarged and palpable three to four finger-breadths below the costal margin. When he returned in 1894 he reported having been tapped at intervals of about ten days, in all sixty-five times. After the removal of 9700 c.cm. of fluid the liver could be felt below the ensiform cartilage; it was hard and apparently bound down by adhesions. A probable diagnosis of hepatic cirrhosis was made.

The autopsy was performed eight hours after death on a warm day in June. The anatomical diagnosis was: Old adhesions between liver, stomach, spleen, and pancreas. Large hepatic gumma. Syphilitic ulcer of the stomach with perforation. Acute diffuse, sero-fibrinous, and gaseous peritonitis.

Only such parts of the protocol as bear on the subject of the paper are given. The peritonitis, it may be remarked, was caused by a mixture of the bacillus aerogenes capsulatus and the bacillus coli communis, the former organism predominating.

The omentum was greatly shortened, the small intestine contracted, and the general serous surfaces were thickened. The loops of the jejunum and ileum were particularly firm and rigid. The spleen was much enlarged, measuring 12 x 7 x 7 cm.; capsule opaque and cartilaginous. No gummata. It was bound firmly to the fundus of stomach and covered by the very closely adherent omentum. The latter

structure contained little fat, appeared as a mass of tatters, and was gathered together at the left border of the stomach, with which organ and the spleen it was firmly united. In gently separating the adhesions in this region stomach-contents were seen to issue from a small opening in this organ. They agreed with the material found in the peritoneal cavity when it was first opened. The wall of the stomach in this situation was firm and board-like, and, on being dissected away from the spleen, was found thickened out of all proportion to the rest of the organ. The perforation had taken place below the splenic adhesion and at a point uncovered by complete omentum.

Stomach laid open along the lesser curvature. Natural size. Drawing was kindly made by Dr. Livingood.

On opening the much-contracted stomach the general mucous membrane presented a mammillated appearance, but in the fundus 4 cm. from the œsophageal opening and occupying the greater curvature a large ulcer, measuring 5 x 5 cm., was found. The base of this over

most of the central part was the muscularis; the edges were thick, polypoid and firm, and the perforation 15 x 3 mm. in size. Just about the perforation the tissues presented a greenish and necrotic appearance.

The liver was bound to the diaphragm; its capsule was thick and cartilaginous. The left lobe was reduced to a mere appendage; but it was firm and nodular. The right lobe was not especially reduced in size. On section of the organ the remnant of the left lobe was occupied by a mass formed by the confluence of several gummatous nodules, and the mass extended well into the right lobe along its lower border. The tumor thus formed lay over the portal vein, which was thick and white in color as it entered the porta of the liver and passed upward to the summit of the liver between the lobes and impinged on the vena cava.

The dimensions of the tumor were 11 x 4 x 5 cm. The gummata were of perfectly characteristic appearance and, on histological examination, presented the usual structure. Gummata were not found in other organs.

For the purpose of the microscopical study, pieces of the ulcer from several different parts were subjected to examination. The principal microscopic characters are as follows: The pathological process is localized chiefly in the submucosa and exists in two distinct stages. The earlier stage is less frequently met with, and consists of a cellular infiltration of the submucosa through which this tunic is rendered much thicker than normal. The cells belong, in general, to the type of granulation-tissue cells, many of which are large and epithelioid in appearance. They are interpolated between the old connective-tissue fibrils and collected into large, more independent foci. The infiltration extends from the submucosa into the muscular coat, and to a much less degree into the mucous layer. The muscularis mucosa is for the most part the limiting line above. Within the large cellular accumulations foci of necrosis occur. These are quite large, and consist of centres of coagulation necrosis in which much fragmentation of nuclei and emigrated polymorphonuclear leucocytes are prominent features. The form of necrosis is consistent either with tuberculosis or syphilis; in its acuteness it resembles that seen in the former disease. The necrotic foci extended freely into the muscle and not at all into the mucosa. The bloodvessels in this situation show a simple infiltration of the adventitial coat except in the necrotic areas, where they are obliterated.

The later stage is more common, and is what is met with in all parts of the ulcer and the tissues forming its elevated boundaries. It consists of dense fibrous tissue which, again, is developed chiefly in the submucous and then extends into the muscular tunic. Scattered granulation-tissue cells are found among the developed fibrils. The bloodvessels are extensively diseased; endarteritis and endophlebitis obliterans and hyaline thrombosis, with organization, are common. The serous coat, too, is thickened and in some places about the adhesions greatly so.

The base of the ulcer is covered to some extent with mucous membrane, and only in its centre is it bare. The muscular coat is exposed in this part, and the more superficial fibres are quite necrotic. The elevated edges of the ulcer are clearly not the remains simply of the

old mucosa and submucosa. This is proven by comparison with the surrounding intact mucosa, which is much less elevated. The microscopical examination shows the thickening to be due to a new development of dense fibrous tissue, such as was described in the later stages of the general pathological process.

There can, I think, be no doubt that the ulcer is of syphilitic origin; the character of the new tissue and the form of cell-death met with seem sufficient proof for this belief. But I think it much more improbable that it is due to the softening of a gumma. Indeed, I find very little evidence in support of such a view. On the other hand, the appearance described speaks more for an indirect form of necrosis of the mucous membrane, brought about by the combined softening of the submucous gummatous infiltration and the obstruction and obliteration of bloodvessels in the same situation. The mucous membrane thus deprived of its nutrition became necrotic, was removed, and the ulcer resulted. The submucosa suffered either directly through necrosis of the infiltrating cells, or, again, indirectly, owing to the vascular changes combined with the action of bacteria.

The clinical course of the disease is made clear by the autopsy findings. The splenic tumor and ascites were the result of the portal obstruction; the obstructing agent was the syphilitic tumor. It seems reasonable to suppose that the gumma was larger at one time than it was at the autopsy, and that the reduction of the ascites was owing to this change. The evidence for this might be found in the size of the left lobe of the liver, and is strengthened by the absence of a marked collateral circulation. The immediate cause of death was the peforation into the peritoneal cavity of the gastric ulcer in a part unprotected by adhesion with surrounding structures.

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## THE DIAGNOSIS OF NEPHRITIS WITHOUT ALBUMINURIA.

By Arthur R. Edwards, A.M., M.D.,

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The diagnosis of non-albuminuric nephritis is so inseparably connected, logically and symptomatically, with nephritis attended by albuminuria that certain exceptional features of the latter type must be first considered. Acute and chronic nephritis are usually diagnosticated with ease when the urine of every patient is examined systematically, repeatedly, and from twenty-four-hour specimens, considering specific

gravity, gross amount of solid excretion, albumin, and microscopic morphology—casts, blood, pus, etc. It is justly believed that care in the directions indicated insures accurate diagnoses, a supposition in the main correct, and yet subject to various clinical errors. Considering, then, under diagnosis exceptional clinical features, the amount of urine may decrease in the terminal stage of interstitial nephritis, or be constantly small when cardiac hypertrophy fails to develop, for example, in parenchymatous types, or when, in interstitial forms, general nutrition is sufficiently impaired to preclude the usual myocardial hyperplasia and hypertrophy. Low specific gravity and decrease in total solids may indicate persistent functional inadequacy rather than organic renal disease. Albumin is found in most cases in which repeated examination is made of the daily quantity passed. It goes without saying that analysis of single specimens is particularly deplorable from the obvious and often vainly emphasized errors incident to such superficial examination. Clinical experience teaches that we often rely with a sense of false security upon signs and symptoms generally regarded as classical or infallible. Hence we are subsequently astonished at the pathological lesions revealed at autopsy. This statement applies particularly to albuminuria in nephritis. I am certain we overlook both acute and chronic nephritis in regarding albuminuria as a certain or constant symptom. Nephritis without albuminuria certainly exists, although reference to the subject is very meagre in established and current literature.

Casts may be found at intervals when albumin is temporarily absent, when albumin is permanently absent or late in resolving inflammatory processes after chemic tests prove the final absence of albumin. Casts should be searched for, even when albumin is absent, although many are prone to examine the sediment of non-albuminous urine with predetermined negative results.

Our conceptions have been broadened concerning the significance of hyaline casts, now regarded as occurring in urine otherwise apparently normal. Granular and epithelial casts probably always point to degenerative or inflammatory lesions.

As a cardinal diagnostic point with retinitis, albuminuria, and the urinary findings, we consider those cardio-vascular alterations which, frequent in the interstitial, are at least inconstant in the parenchymatous types. Heart and arterial changes are by no means invariable, even in contracted kidney. Cardiac hypertrophy may be simple, as in primary contracted kidney, or eccentric, as in other forms of contracted kidney. There may be dilatation without hypertrophy, or, indeed, even myocardial atrophy is found, as observed in a recent case. The circulatory changes may be otherwise explained — *e. g.*, from arterio-sclerosis of different etiology. Senator states that he who invariably examines the

urine and heart in every instance rarely fails to diagnosticate nephritis. This very interdependence of cardiac and renal physiology and pathology, usually of diagnostic aid, may prove a source of clinical confusion. Thus primary cardiac disease may cause renal congestion, embolism, or even acute or chronic nephritis. Again, alcohol or syphilis may be a common cause for an arterio-sclerosis, myocarditis, and nephritis, diseases as subordinate to the causal factor as possibly independent of each other. Finally, a heart lesion may be wholly secondary to renal disease. While simple renal stasis is usually differentiated with ease by considering the sediment, the absence of inflammatory insignia, and the parallelism between urinary findings and cardiac activity (whence the diagnostic value of such cardiants as digitalis and strychnine), yet in terminal stadia with cardiac weakness, extensive hydrops, dyspnœa, râles, or systolic murmur, it may be difficult or impossible to differentiate between myocarditis with renal stasis and renal disease with ultimate cardiac asystole, although gallop-rhythm is more common in the heart of renal disease than in primary cardiac affections.

The diagnosis of latent, atypical, non-albuminuric nephritis, important in itself, becomes more difficult and important when nephritis is associated with other diseases. In the logical process incident to the diagnosis of frank nephritis, we often ask ourselves, Is the nephritis the sole lesion? Many errors are made in the interpretation of this question, although the observative element in our process may be absolutely correct. Finding a patient with undoubted nephritis we ask, Where does said nephritis stand? What is its exact dignity? Is its cause hidden? Is it primary? Is it somewhat of an accidental finding? At this point the most delicate analysis is demanded if we would diagnosticate correctly. It is frequently most difficult, or actually impossible, without several early, careful observations of a case, to decide upon the first examination whether a chronic nephritis is the cause of a pericarditis, pleuritis, or pneumonia, since nephritis in lessening physiological resistance is frequently complicated by these highly characteristic, secondary, or it may be, terminal infections. Conversely, a tubercular pleurisy, a pulmonary tuberculosis, or a genuine lobar pneumonia is capable of exciting secondary nephritis. In the two possibilities cited it is not always easy to separate an acute from a chronic nephritis, whence the diagnosis with the parallel prognosis may depend solely upon the chronological test, the clinical evolution of the disease. Many can recall from hospital practice instances of skull fracture, miliary tuberculosis, leptomeningitis, cerebral abscess, sepsis, and other diseases, falsely diagnosticated uræmia, simply because nephritis was also present. Senator[1] has said, doubtless from personal diagnostic errors, that with-

[1] Senator. Erkrank. der Nieren. Nothnagel's System, Bd. xix. Theil v. Abth. 11, S. 174.

out previous history we can often only diagnosticate a renal disease and suspect other latent affections. The danger of mistaking uræmic symptoms, as hemicrania, nervous symptoms, dysentery, etc., for independent disease must be greater in direct ratio to difficulty of diagnosis. The object of the paper is to emphasize certain anomalous types of both acute and chronic nephritis and personal diagnostic errors in their study. Many authors, as Tyson,[1] have remarked upon the lack of correspondence between the clinical and pathological findings in nephritis. Semmola[2] holds that clinicians err in considering albumin in the urine the measure of nephritis. Cantharidin produces an intense nephritis, attended, however, by very slight albuminuria, while mercurials produce slight parenchymatous changes with copious albuminuria.

Few authors record acute nephritis sine albuminuria. Lecorché and Talamon have never observed the combination. Qurirolo[3] described a case of post-scarlatinal nephritis unattended by albuminuria. In speaking of the general difficulty of diagnosticating nephritis when no albumin is found, he remarks that not only œdema, but also uræmia and death occur with wholly negative urinary findings. In his case nephritis was determined at autopsy. Intra vitam, the urine was free from albumin; the amount, the specific gravity, and percentage of urea were satisfactory. Dickinson[4] mentions that casts may be absent in what he designates acute interstitial nephritis, though much albumin be present. Bartels[5] never observed nephritis without albuminuria in acute parenchymatous nephritis, although in cases of acute scarlatinal nephritis without autopsy he suspected the condition, but could not demonstrate it. Henoch[6] saw marked acute non-albuminuric parenchymatous nephritis with casts toward the end of life, and in a second case albumin, present at first, later wholly disappeared. Fermi observed a scarlatina epidemic in which nephritis prevailed without albuminuria. We must remember that anasarca complicating scarlatina does not necessarily prove the existence of nephritis. Bartels found casts constantly in acute nephritis. He cautions against interpreting as nephritis the albuminuria occurring in severe infectious disease, even though accompanied by hyaline casts. Blood or blood-casts should also be present to confirm the diagnosis. Rosenstein[7] possibly hints at the danger in overlooking acute nephritis when he remarks that disappearance of albumin in acute nephritis is no proof

[1] Tyson. Practice of Medicine, 1897.
[2] Semmola. Nuove contribuzioni sperimentali alla patogenia discrasica o ematogena dell albuminurica brightica. Riforma medica, 1894, No. 254.
[3] Qurirolo. Riforma med., 1896, No. 99.
[4] Dickinson. Allbutt's System, vol. v. p. 369.
[5] Bartels. Ziemssen's Pathologie und Therapie, Bd. ix. p. 247.
[6] Henoch. Berliner klin. Wochensch., 1893, No. 50.
[7] Rosenstein. Nierenkrankenheiten, pp. 128 and 144.

that the process has ended, since blood and casts may persist and indicate that the inflammation still lives. Rosenstein has seen blood and casts appear in scarlatinal nephritis before albumin could be detected. Senator[1] regards albumin as constantly present in acute parenchymatous nephritis. Leube[2] has never observed its absence in acute nephritis, although he speaks of alleged instances in literature. Sanné found albumin absent thirty times in one hundred and twenty-four cases of scarlatinal dropsy.

The following case was observed in my service in Cook County Hospital, July 26, 1895, to August 30, 1895:

P. F., No. 143,474. Swede, aged twenty-six years, single. Family history quite negative, one brother having died at twenty-three years with pulmonary tuberculosis. Personal history: Lived in Chicago seven years; drinks beer occasionally; uses no whiskey; smokes. Previous disease includes only poorly-remembered diseases of childhood. Present affliction began three weeks before admission, with anorexia, slight diarrhœa, weakness, fever. No headaches, vomiting, epistaxis.

Examination: Apathetic. Dichrotic pulse. Rose spots. Splenic tumor. Slight diarrhœa, with characteristic typhoid stools. Slight cough. Pulse 70 to 88 or 90. Temperature 102°–104° F., with solution by lysis. Respirations 24. Urine 1175 c.c., acid, amber, specific gravity 1022; no albumin, no sugar, no casts. The diagnosis was typhoid, and the treatment was fluid diet, sponging, salol and calomel. Four days after admission the eyelids became œdematous. The urine showed no albumin. The anasarca becoming very pronounced and notable on chest, ankles, and face, the urine was again examined from a twenty-four hour specimen, with the following result: 1100 c.c.; acid; no reaction to nitric acid, picric acid, or ferrocyanide tests for albumin; specific gravity 1016; microscopically, a small number of red disks, many granular and epithelial casts. The diagnosis of intercurrent acute nephritis in the course of typhoid was inevitable, despite the lack of albumin. Tests were carefully made with the same results again on August 1st, and every other day until his discharge on August 30, 1895, the amount of urine remaining practically the same, specific gravity varying from 1014 to 1016 or 1018. Granular, epithelial, and once several fatty epithelial casts were found. At the time of discharge the casts, so numerous at first, had all but disappeared, an occasional granular cast being found only after examination of several slides. Fortunately, anatomical confirmation of the diagnosis was lacking.

A second case, an acute exacerbation of a chronic nephritis, was seen with Dr. B. Van Hoosen. Previous history was chiefly of repeated attacks of erysipelas covering a period of at least six years. The patient was extremely nervous, and had suffered from weak stomach and capricious appetite. The patient, when first seen, was suffering from recurrent erysipelas, which, nearly healing in one locality, broke out again anew in contiguous areas and covered repeatedly the face,

[1] Nierenkrankheiten in Nothnagel's System specielle Pathologie u. Therapie.
[2] Leube. Diagnostik der inneren Krankheiten.

trunk, and extremities. Nausea was a prominent symptom. There were no suggestive cardio-vascular findings. The temperature was but little above normal, the pulse tended to rise with exertion. An emphysema, with the usual findings, existed. Nephritis was suspected, but two examinations showed no albumin, no casts, no decrease in total solids, specific gravity, nor quantity. A third specimen gave the least clouding with picric acid; the fourth gave no albumin, but a few hyaline casts, with some blood cells, were detected in the centrifuged sediment. The albumin and casts disappeared, but the general condition became much worse, and in about two weeks after first examination cardiac dilatation with a tachycardia of 130–160 intervened. Cardiac stimulation of enormous amounts of digitalis, morphine, nourishing enemata, infusions of salt solution, whiskey, strychnine, ammonia were unavailing. Just before death considerable blood appeared in the urine. The probable ante-mortem diagnosis was nephritis (acute upon chronic), cardiac dilatation, and recurrent erysipelas. The autopsy, at which Drs. F. X. Walls, B. Van Hoosen, and R. Hickey-Carr were present, revealed very slight arterio-sclerosis, marked pulmonary emphysema, bronchial catarrh and stasis, hepatic congestion, fatty degeneration and focal microscopic induration and round-cell infiltration, induration of spleen and dilated heart. The kidneys were deeply congested, and, while not weighed, measured about 2–4 cm. more than normal in every direction. The capsule was not universally adherent, but tore the renal parenchyma here and there over a considerable area in both kidneys. The cortical markings were obscured, and here, as in the medulla, deep-red streaks alternated with yellow to gray bands. Dr. Walls, Director of the Pathological Laboratory in Northwestern University Medical School, kindly examined microscopically all of the viscera, and found the following changes in the kidneys:

The sections are very diffusely congested. The capsule is thickened and infiltrated with small round cells. Immediately beneath the capsule in the cortex of the kidney are many areas of dense round-cell infiltration which are distinctly perivascular, varying in size from small foci to large wedge-shaped areas about one-fiftieth inch in diameter, with apices directed outward. In the larger areas compressed, degenerated foci are observed, together with atrophied tubules and occasional fibrous glomeruli. The cortex is the seat of advanced parenchymatous change. Little change is observed in the connective tissue, only occasional spots of perivascular round-cell infiltration being seen. Most of the glomeruli are large, with congested tufts and slightly increased connective tissue. Some of the cells of Bowman's capsule are swollen and desquamated. The convoluted tubules are distended, the lumen large, filled with light amorphous, granular material. The epithelial cells are large, coarsely granular, with faint or absent nuclei, often desquamated. Here and there the tubules are filled with red blood-cells. The tubules are relatively intact in the medullary part, although filled now and then with red disks and casts. The large bloodvessels show slight intimal induration and increased fibrous tissue in the muscular coat.

Whether we interpret the pathological findings as those of acute parenchymatous nephritis or as an acute exacerbation of a chronic nephritis, they are equally to the point. In either instance hyaline

casts found once, and a mere trace of albumin, correspond clinically equally well, or indeed better, with parenchymatous degeneration than with acute nephritis of the intensity observed microscopically in the case quoted. I expected to find a chronic interstitial change rather than parenchymatous inflammation.

Rayer[1] was probably the first to remark the disappearance of albuminuria in the course of chronic Bright's disease. Many authors have since noted examples of profound renal lesions without albuminuria during life. Albumin may be absent even in amyloid nephritis. Mahomed states that absence of albumin is almost the rule in the contracted red kidney. Lecorché and Talamon[2] believe that albumin is rarely absent constantly, that one urinary examination is sufficient, and that tests of several specimens must be made with delicate and various reagents. They quote an instance of saturnine nephritis in which albumin disappeared when the glomeruli became fibrous and their secreting function was suppressed. Burrows described similar cases. Roberts[3] relates a case of post-scarlatinal parenchymatous nephritis in which the urine for four months prior to death contained no albumin, blood, or casts. Autopsy revealed a large white kidney. Roberts remarked that the anatomical findings could not be questioned. Lecorché believes that latent nephritis is but nephritis observed in periods of remission or complete compensation. Lecorché and Talamon, after stating the well-known fact that the percentage of albumin is not proportionate to the severity of the renal lesion, describe death occurring from cerebral hemorrhage, cardiac arrest, or intercurrent disease while the urine is quite negative. Necropsy shows contracted kidneys, and the absence of albumin is explained by the fact that the diseased glomeruli become fibrous and impermeable; hence only the sound glomeruli secrete urine, which is therefore free of albumin. Lancereaux[4] observed fatal saturnine nephritis unattended by albuminuria. Ackermann described a case of chronic parenchymatous nephritis in which, during the last thirteen weeks of life, renal casts were absent. The necropsy explained their absence, since in the pelvis of the kidney there was a mass of casts weighing eight grammes. Eichhorst noticed the absence of albumin from the urine for weeks and months at a time, so that the patient may even be considered well until a fresh setback occurs. Leube cannot confirm statements that albuminuria can be entirely wanting in chronic (interstitial) nephritis, while Rosenstein states that albuminuria, though important, is not indispensable, and that we should always examine for casts, since they may occur without albuminuria. Senator maintains that albumin is constant in chronic diffuse non-indura-

[1] Lecorché and Talamon, p. 610. Traité de l'Albuminurie et du Mal. de Bright.
[2] Ibid.
[3] Roberts on Urinary Diseases, p. 355.
[4] Lancereaux. Trans. Internat. Med. Congress, 1881, vol. xi. p. 191.

tive nephritis, and that cases of alleged interstitial nephritis with wholly non-albuminous urine are but instances of arterio-sclerotic induration. Dieulafoy's experience includes four cases in which the uræmia of interstitial nephritis was unattended for seven months to a year by any albuminuria. Delafield,[1] under the title of "Chronic Productive Nephritis without Exudation," writes that the urine is without albumin or casts or with albumin and very few casts. Bartels states that the chemic analysis shows constant albuminuria in chronic parenchymatous nephritis, which never fails during the entire clinical course. The same author holds that it is not constant in interstitial types, and observed a single instance in which albuminuria was constantly absent. Tüngel has often found it absent in chronic interstitial nephritis. Regarding absence of casts, Sehrwald[2] noted disappearance of casts without that of albumin. He described in urine containing but few casts many granular masses and free nuclei, while the cylinders became paler and more delicate. Casts, he maintains, may be dissolved in urine, not from chemic causes nor from decomposition alone, but from the presence of pepsin in acid urine, the action of the pepsin being increased by the urine remaining long in the bladder or by high temperature. The dissolution of casts may occur even in the kidney itself. He recommends examination of freshly-catheterized specimens, not long excreted into the bladder before withdrawal.

Case III. *Acute diffuse parenchymatous nephritis.*—W. A. W., St. Luke's Hospital, October 25 to November 4, 1896. History written by Dr. Thomas H. Lewis. A book-keeper, English nativity, aged thirty-five years, married. Complains of pain in back, chest, and legs. On September 26, 1896, present illness began with dull pain extending from throat to epigastrium, and with pain in the lumbar region. Marked dyspnœa and palpitation existed. There was pain over the lower lobe of the left lung. Great thirst, anorexia, constipation. After treatment outside of hospital, pain disappeared and dyspnœa ceased; but two weeks later, after sleeping near an open window, his joints became swollen, the left knee being especially painful.

Previous illness: Usual diseases of childhood. At seven, rheumatism. In 1890 stomach trouble from which patient lost seventy-five pounds. The thyroid gland became swollen, his pulse rapid, and marked exophthalmos developed. No history of venereal disease.

*Family history.* Maternal grandfather died of gout. Otherwise negative.

*Personal history.* At present uses tobacco and liquor moderately, although formerly drank whiskey in large amounts.

*Physical examination.* General nutrition fair. Mucous membranes normal. Considerable exophthalmos, with von Graefe's sign. Tongue slightly coated. Lungs negative. Dilatation of left ventricle, apex being finger's-breadth beyond the nipple-line. A short, superficial,

[1] Delafield. Twentieth Century Practice, vol. i.
[2] Sehrwald. Deut. med. Wochensch., 1890, No. 24.

rather rough systolic murmur was heard during complete expiration during the last two days of life. The pulse was uniformly rapid, from 110 to 120. Respirations 38 to 44. Temperature-curve ranging from 101.6° to 103.8° F., fairly though not absolutely continuous. The thyroid was not enlarged. Abdomen negative, no tympany, rather sunken in contrast with the well-formed thorax. No splenic tumor; liver, normal outlines. The knee-joints were swollen, painful, with distinct floating of the patella. Pain without swelling in right shoulder and left wrist. No œdema. The patient complained of precordial pain. Alkalies and salicylates, and, finally, potassium iodide in full doses relieved neither the pain nor the swelling. The bowels moved freely after administration of calomel; stools were dark in color. Considerable pharyngeal pain and hyperæmia on the ninth day; appropriately treated. At the same time the pulse rose to 150, and dyspnœa, with cyanosis, was marked; combated with strychnine, digitalis, camphor, and whiskey. Death from cardiac exhaustion on the eleventh day after entrance. Urinalysis, acid, 1018 to 1028, darkish color, no albumin, no sugar, urea 2 per cent., amount thirty to forty ounces, although bowels were constantly relaxed; microscopic examination showed stray pus-cells.

The diagnosis was uncertain for a long time. The patient had exophthalmic goitre, which might have explained many of the findings, yet certainly not the temperature, angina, and articular signs. Typhoid fever was excluded by the absence of roseolæ, splenic tumor, tympany, character of the stools, absence of delirium, etc. A rapid pulse in a goitrous subject would not exclude complicating typhoid. Miliary tuberculosis was considered, favored by the cyanosis, dyspnœa, and increased respirations, perhaps, but still the circulatory failure, articular swellings, angina, argued against it. Sepsis cryptogenetica best explained the course and findings, the angina, synovitis, etc. Ulcerative endocarditis was considered, but rejected. The urine was searched chemically and microscopically with great care for possible evidence corroborative of sepsis in the form of nephritis, but repeated examinations were negative.

*Autopsy*, November 6, 1896. Pleuræ practically negative, except many ecchymoses. Pericardium-cavity obliterated almost completely by old adhesions and by fresh exudate at apex, mostly fibrinous, but partly sero-sanguineous. Stripping off the fresh exudate, the visceral and parietal leaves of the pericardium showed hemorrhagic areas. The valves were practically normal. The ventricles were dilated and hypertrophied, the right being 6 mm. and the left 15 mm. thick. The lungs showed a few hemorrhagic infarcts, pulmonary œdema, hypostatic congestion, and a few cases of lobular pneumonia. Hemorrhages were found in the renal pelvic mucosa, in the pancreas, and in the articular synovial membranes. The liver was slightly enlarged, fattily degenerated, and somewhat congested. The kidneys were very large; unfortunately, they could not be weighed; the capsule stripped readily, showing subcapsular ecchymoses. The cortex was swollen and its markings were very indistinct. The organs were the seat of cloudy swelling, and were, like other parts, considerably congested. Several white infarcts existed. As the macroscopic renal findings were a surprise, special attention was given to the microscopic examination. In the cortex were areas in which exudation of white cells was sufficient

to obscure the field; less exudation existed in the medulla. The glomeruli were not greatly altered, there being some congestion, some exudation, and considerable deformity by thickening of the capsule. The epithelial cells lining the large and small tubules were universally degenerated, disintegrated, and desquamated, the cells without nuclei contrasting sharply with the deeply-stained extravasated leucocytes. No essential nor systematic increase in connective tissue, except in quite a number of the glomeruli. Undue vascularity existed, together with pouring out of the hæmocytes into the desquamated uriniferous tubules.

*Diagnosis.* An acute diffuse parenchymatous nephritis, with possibly more ancient changes of distinctly minor dignity.

Stewart[1] justly remarks that when albumin is not found, the later search for casts is at the best perfunctory. Said search must be conducted carefully with the aid of a centrifuge, with a low lens and properly graduated illumination. He believes that albumin may be constantly absent throughout the course of chronic nephritis, and casts be detected only after much search. He frankly states the conviction, which we also feel regarding our own experience, that he has overlooked many cases of nephritis without albuminuria. Wilkes[2] has pointed out that granular or cirrhotic kidney may not be evidenced by albuminuria, Stewart admitting that the form described is not a true nephritis. As Stewart states, Osler, Fagge, Jaksch, and others mention the subject briefly, if at all. Millard[3] and Mahomed[4] speak of the absence of albuminuria, but refer chiefly to granular kidney or the typical arterio-capillary fibroid kidney of Gull. In the cases reported by Mahomed, the kidneys belonged to the second stage of his classification, the first being functional renal inadequacy, without renal or circulatory alteration, the second chronic Bright's disease without nephritis (red granular kidney, arterio-capillary fibroid kidney), and the third chronic Bright's disease with nephritis (mixed or mottled granular kidney), where epithelial changes exist and diagnosis is easy. Stewart's estimation of Mahomed's view as extreme is just. It seems that Mahomed has, in instances at least, confused cause and effect, and that arterio-sclerosis is forced to explain too much.

Case I. of Stewart was nephritis without albuminuria, but with hyaline and granular casts found once. Of his seven cases one came to autopsy, which revealed granular kidneys and hypertrophied heart, although the casts and albumin seemed to have been absent throughout its course. Stewart holds that several of his cases do not correspond

[1] Stewart, D. D. Occurrence of a Form of Chronic Bright's Disease, other than Typical Fibroid Kidney, without Albuminuria. Transactions Pan-American Med. Congress, 1893, p. 191. See ref. 23–24.

[2] Wilkes. Guy's Hospital Reports, second series, vol. ii.

[3] Millard. Chronic Bright's Disease.

[4] Mahomed. Guy's Hospital Reports, 1879, vol. xxiv.; and Chronic Bright's Disease without Albuminuria. Ibid., 1880–81, vol. xxv.

to the fibroid kidney, the one form in which albumin may be persistently free. Epithelial changes were present, proven from the finding of hyaline, granular, and waxy casts.

He tabulates the differences between what we may term his type of nephritis and the parenchymatous and interstitial forms as follows:

| *Chronic Parenchymatous Nephritis.* | *Chronic Interstitial Nephritis.* | *Form of Chronic Non-albuminuric Nephritis closely resembling neither.* |
|---|---|---|
| Urine always albuminous; scanty in amount except during secondary atrophy, then may be abundant; light colored, depositing urates readily. Specific gravity normal or lighter than normal, though low for amount passed. | Urine not constantly albuminous; usually to degree recognizable by Heller's test. Urine profuse unless cardiac failure with dropsy, etc., light colored, low gravity; slight sediment, often invisible. | If urine is ever albuminous, it is probably not as an incident of the malady, as the most decided symptoms of renal inadequacy may be present, or indeed uræmia with persistent absence of albumin; urine subnormal in amount, quite scanty, high colored, without cardiac weakness and dropsy, with high blood-pressure; gravity lower or higher than normal, though relatively low considering amount. |
| Casts numerous, great variety, epithelial, granular, hyaline, waxy; blood-corpuscles, and connective tissue; shreds not infrequent. Microscopically urates and phosphates predominate; oxalates less common. | Casts not frequent, usually hyaline, less often granular. Renal epithelium and blood-cells scanty or absent; oxalates common. | Casts common, but not numerous, principally hyaline but granular, present in all though in less number; epithelial casts rare (seen in very small number in two cases); waxy casts in one case; cylindroids in all, in several very numerous; renal epithelium in all; oxalates very common; urates often in relative excess; occasionally blood and pus cells. |
| Urea usually much diminished, uric acid practically normal. | Total solids often normal; urea may be normal, usually diminished; uric acid is usually diminished. | Total solids, urea and mineral salts, always diminished in amount; uric acid normal or diminished. |
| Cardiac hypertrophy not invariable, though tendency to increased blood-pressure. Atheroma not common in early stages. | Hypertrophy usual; blood-pressure raised; fibrosis almost invariable and pronounced. | Hypertrophy not detected, although in all first sound forcible, second aortic accentuated; blood-pressure raised in five (out of seven); not detectable in two while on non-nitrogenous diet; no arterio-sclerosis in any. |
| Uræmic symptoms common, although less than in interstitial; no loin pain. | Uræmia common; no loin pain. | Uræmic signs common; loin pain usual. |
| Dropsy usual; obstinate. | No dropsy, and even œdema not often detectable till disease advanced. | No dropsy; œdema not common. |
| Occurs mostly after age of forty. Patient pale and waxy looking. | Mostly after forty (degenerative period); for a long time only failure of nutrition noted; grayish complexion. | Three cases under thirty, others middle aged; no degenerative process; facies pale; no marked anæmia. |

Stewart comments upon the dissociation of casts and albumin in his series of cases, casts being more or less constantly present, while albu-

min was usually absent. Probably casts are due "rather to faulty metabolism or inflammatory irritation of the renal epithelium than to exudation of serum."[1]

Charles W. Purdy,[2] of Chicago, wrote an exhaustive article upon the "Pre-albuminuric Stage of Chronic Nephritis," in which, however, his stress was laid particularly, as his title hints, upon the absence of albuminuria in the formative stages of the disease, quoting Burrows, Christison, Rayer, Reed, Malmsten, Grainger Stewart, and Roberts.

Graves and Monneret have noted nephritis without albuminuria, as have also Hue, Huchard, Millard, Guesdon, Dolespierre, Gand Delalande, Dieulafoy, de Coquet, and others already cited.[3]

We are forced to ask ourselves whether casts always indicate nephritis—*i. e.*, whether finding casts without albumin is adequate proof of nephritis. Zimmermann, Key,[4] Griesinger, Meyer,[5] Rosenstein,[6] Vogel, Thomas,[7] Senator,[8] Burkart,[9] Fischl,[10] Bartels,[11] Nothnagel,[12] etc., have exceptionally observed cylindruria without albuminuria. When Steinbeck constructed the centrifuge, Leyden and Glaser found hyaline casts in the urine of healthy individuals. Radomyski[13] examined cases of valvular heart disease, arterio-sclerosis, gastro-intestinal inflammation, pulmonary tuberculosis, acute infectious diseases, carcinoma, cachexia, nervous diseases, and healthy individuals, and found casts in a very great number, explained by him as the result of circulatory disturbance. Daiber[14] found hyaline and granular casts without albumin, especially in circulatory and amyloid disease. Alber[15] reported granular, hyaline, and epithelial casts and red blood-disks without albuminuria. Kossler[16] reports hyaline, granular, epithelial, waxy, and corpuscular casts in many infectious and other conditions without coincident nephritis or albuminuria. The specimens microscopically showed only degenerative changes, but no inflammatory insignia. In his observations nucleo-

[1] Lubarsch. Centralbl. f. allgem. Path., Bd. iv. No. 6; Aufrecht, Centralbl. f. clin. Med., June 30, 1893.

[2] Purdy. Pre-albuminuria Stage of Chronic Bright's Disease. Chicago Medical Journal and Examiner, May, 1885.

[3] Saundby. Occurrence of Dropsy in Granular Kidney. Hue. Thèsis, Paris, 1859. Huchard. Union Médicale, 1874. Millard. New York Med. Journ., 1882. Guesdon. Thèse, Paris, 1882. Delespierre. Thèse, Paris, 1884. Gand Delalande. Thèse, Paris, 1884. Dieulafoy. Soc. Med. des Hôp., 1886. de Coquet. Thèse de Bordeaux, 1890.

[4] Key. Om. S. K. Tubularaf jutringarmas, Stockholm, 1863.

[5] Meyer. Virchow's Archiv, Bd. v. S. 199.

[6] Rosenstein. Nierenkrankheiten, pp. 128 and 144.

[7] Thomas. Archiv f. Heilkunde, Bd. xiv.

[8] Senator. Virchow's Archiv, Bd. lx.

[9] Burkhart. Die Harncylinder, Berlin, 1874.

[10] Fischl. Prager Vierteljahresschrift, 1878.

[11] Bartels. Ziemssen's Pathologie und Therapie, Band ix. p. 247.

[12] Nothnagel. Deut. Archiv f. klin. Med., 1891, No. 43.

[13] Radomski. Gesammtte Abhandlungen aus der medicin. clinik zu Dorpat. Wiesbaden, 1893.

[14] Daiber. Correspondenzblatt f. Schweizer Aerzte, 1894, No. 24.

[15] Alber. Inaugural Dissertation, Wurzburg, 1894.

[16] Kossler. Berliner klin. Woch., April 8 and 15, 1895, Nos. 14 and 15.

albuminuria and cylindruria occurred together, whence he distinguishes two types of cylindruria, (*a*) degenerative and (*b*) inflammatory. He has observed in scarlatina, as had Baginsky in diphtheria, febrile albuminuria, followed by cylindruria with nucleo-albuminuria and, finally, by nephritis with albuminuria. In the past four years I have observed three cases of generalized fleeting anasarca in which direct examination, as well as argument by exclusion, led me to diagnosticate angio-neurotic œdema. In one instance, seen with Dr. T. J. Watkins, a healthy man suddenly complained of swelling of the eyelids, and the next morning of swelling of the penis and scrotum. There was no venereal history nor lesion. A few hours later the feet, wrists, body, and lips swelled to an enormous extent. Examination of the urine gave acid reaction, 1020, normal quantity, and solids, no albumin, etc., and no casts nor formed elements in the fresh and centrifuged sediment. A circumspect diagnosis of angio-neurotic œdema was made. Recovery was complete in a few days. The case is presented without comment other than that it might have been a nephritis without cylindruria and albuminuria.

The chief considerations and conclusions of the paper may be summarized as follows:

1. Carefully repeated routine chemical and microscopical examination of the urine every twenty-four hours usually, but not invariably, detects acute and chronic nephritis.

2. The diagnosis of the albuminuric and non-albuminuric types of the nephritides is aided by searching examination of other viscera and parts, *e. g.*, by disclosure of cardio-vascular changes, retinal involvement, etc.

3. These visceral or somatic changes, usually present in nephritis, may be lacking in concrete instances or be capable of other or diverse interpretation, as polyuria, atheroma, etc.

4. The urinary findings, most essential to the diagnosis of nephritis, may be lacking, as may other signs and symptoms of minor dignity. Hence, as we fear instinctively, as it were, the existence of nephritis in certain cases before we examine the urine, so we may still fear its existence after negative urinalysis.

5. Nephritis may be unattended by albuminuria. Such nephritis is usually interstitial in type, of which cases abound in literature.

6. While certain instances of non-albuminuric nephritis correspond to the type described by Dr. D. D. Stewart, yet non-albuminuric nephritis may not exactly correspond to said type, since acute nephritis, chronic parenchymatous nephritis, and chronic interstitial nephritis may exceptionally occur without albuminuria.

7. Casts should always be searched for; they are more constantly found than is albumin, yet they seem in certain instances to betoken

renal degeneration rather than inflammation. They are not invariable in nephritis nor are they invariably nephritic.

8. Future clinical caution and pathological examinations will probably increase the number of cases of non-albuminuric renal inflammations of acute, subacute, and chronic types.

9. Non-albuminuric nephritis is of especial importance (*e. g.*, Stewart's type) in life-insurance and kindred examinations and in practice, since prophylactic measures may be instituted and the prognosis obviously influenced.

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## THE SO-CALLED HYALINE BODIES AND OTHER CELLULAR DEGENERATIONS IN NASAL POLYPI.

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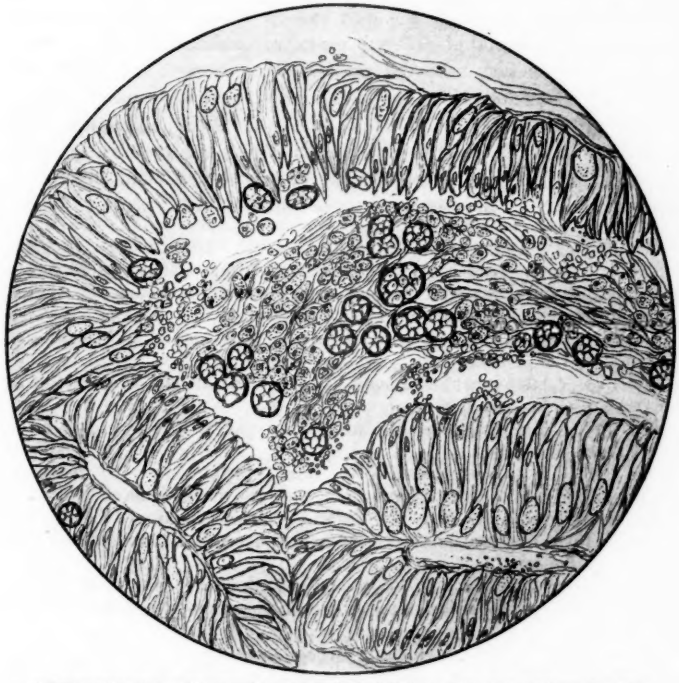
IN a paper (*New York Medical Journal*, November 13, 1897) read before the American Laryngological Association in 1897 I had occasion to refer to a case of adenoma of the nose occurring in the practice of Dr. F. W. Hinkel, of Buffalo. He had sent me a slide holding several microscopic sections from this rare nasal growth. These sections had been stained only with hæmatoxylin, and, although they served the purpose of illustrating certain phenomena with which that paper was concerned, they did not present the striking pictures of those objects with which this communication deals. The growth recurred, and Dr. Hinkel has sent me the portions removed by him, and for thus giving me an opportunity again for a study which is, at least to me, very interesting, I am deeply indebted to him.

Sections double stained with hæmatoxylin-eosin show that the growth has recurred again as a simple adenoma with a papillary surface, but with considerably more evidence of inflammatory changes. My attention was immediately arrested by the appearance in some of the papillary tufts of peculiar rounded or ovoid bodies, varying in size from that of a round white blood-cell to three or four times that diameter. These bodies were divided symmetrically by sulci, which refracted the light strongly into lobules compressed into polygonal shapes, apparently by a limiting membrane. They took the eosin strongly, and neither with the hæmatoxylin nor with any other stain used was there any appearance of a nucleus, although neighboring cells in the stroma reacted as usual to the double stain. The intersection of the light-refracting lines of the sulci occasionally gave the appearance of a distorted nucleus, but more careful examination revealed the true nature of the appearance. The sharp outlines of the bodies were apparently due to a cell-membrane, which, however, could never be satisfactorily made out. In some instances the lobules or granules lay scattered in the stroma, evidently from the bursting of this envelope or from its disintegration. This was not only observed in the case of the larger bodies, but was also seen in those of the smallest diameter. These bodies varied in number from one in a papilla to such a number that the whole stroma seemed filled with them, while in many of the tufts there were none at all. They bore no relation to the bloodvessels nor to the epithelium, although occasionally one of the bodies could be seen among the deeper epithelial cells of the surface. They were almost entirely confined to the stroma. They took the eosin stain, although apparently not so deeply as the stroma, this appearance being doubtless due to their translucency and their light-refracting properties. Sections stained with gentian violet and decolorized with the Gram-iodine solution failed to stain these bodies. No result was obtained from the iodine alone. Their amyloid nature may, therefore, be ruled out. Various other stains were used also unsuccessfully. Fuchsin alone did not differentiate them from the tissues. The following method, however, was eminently satisfactory. Thin celloidin sections were placed in a pale-red fuchsin (Grübler) solution, and left there a few minutes until deeply stained. They were then washed in water and placed in 95 per cent. alcohol in which a few crystals of picric acid had been dissolved. They were kept there until the deep-red fuchsin color had grown pale and indistinct to the naked eye. They were then washed thoroughly in absolute alcohol and clarified in oil of origanum. A little practice soon teaches the relative degree of stain to be secured. Examined immediately, most striking pictures are obtained, but after the lapse of a few days the sharp differentiation of the bodies is weakened. Promptly examined, these bodies are seen brilliantly colored with fuchsin,

and, by their refracting properties, plainly differentiated from all other objects, although the fuchsin stain lingers in the nuclei of the stroma cells, and to some extent in the stroma fibres and in the tips of the epithelial cells. Bodies such as these and in such profusion I had never noted before, although all of my more than 600 specimens from the nose and throat had been double-stained with hæmatoxylin-eosin. Realizing, however, that an occasional occurrence of such bodies might have escaped my notice, and in order to study my previous material in the light of the interest aroused by the observation of these structures, I have gone over the hæmatoxylin-eosin slides carefully, and where the

FIG. 1.



"Hyaline" bodies or "berries" taking eosin and fuchsin stain, but not hæmatoxylin. Cam. lucid. obj. ⅙.

appearances were suggestive I have cut fresh sections from the specimens and stained them with the fuchsin and the picric acid, and have made the following notes:

It soon became evident that while eosin stained these bodies there

were other more or less irregular areas in the stroma of various specimens which took the eosin and, to some extent, the fuchsin in such a manner as to make it likely that, so far as the stains were able to differentiate it, the material was identical. Homogeneous structureless plaques and irregular bodies are occasionally seen, especially among fibrous tissue taking this stain. It also seems evident that this same material is present in the various elements of normal structure. It must, however, always be borne in mind that analysis of albuminous material by stains is not by any means chemical analysis. It is, therefore, not the purpose of these notes to attempt to establish the nature of the material which goes to make up these peculiar bodies, but simply their pathogenesis and origin. The material may be hyaline or colloid, if these terms have any definite chemical meaning, or it may be something else; but it is highly probable that material of different chemical constitution and of varied biological origin may take the same reaction toward the aniline and other dyes. These observations, however, do reveal a certain sequence of morphological facts which forms an excuse for their publication. For the sake of convenience of description, the structures analogous to those seen in Dr. Hinkel's specimen will be called "berries," and other structureless material taking the same stain will be called "plaques."

No. 516. Papillary adenoma of the nose (Dr. Dickerman's case, also referred to in the former paper cited above). Part of this specimen was adenomatous and part of it was œdematous structure, perfectly typical of the ordinary œdematous polyp of the nose. The "berries" are seen in very small numbers in the adenomatous, but not in the œdematous portions of the growth.

No. 275. Adenoma of the nasal septum. Some small plaques, but no berries are to be seen.

No. 294. Adenosarcoma of the nasal septum. Nothing is to be seen of either form.

No. 540. Adenocarcinoma of the nose (Hopkins's case). None.

Beside the adenomatous material from the nose, I have examined slides from adenomata of other organs. Having none of the original material, these observations were made only on old sections stained with hæmatoxylin-eosin.

*Adenoma of the Stomach.* Some of the plaques are present, but no berries are distinctly made out. Some of the plaque material is free in the acini.

*Adenoma of Mamma.* Nothing except some material in the acini.

*Adenoma of the Liver.* There are some plaques in the lumina of the bloodvessels which look as though they might have been evolved from red blood-cells. They are very few in number.

*Adenoma of the Orbit.* Very large amount of the plaque material is seen in the stroma and in the lumina of the bloodvessels, taking the eosin stain deeply. No berries can be distinctly made out.

No. 520. *Alveolar Sarcoma of the Cheek.* Some plaques seen, but no berries. A large number of epitheliomata of the larynx, fauces, etc.,

were examined and the plaque material was always found, but no berries.

No. 617. An epithelioma of the fauces, which contains a very large number of cells, showing with hæmotoxylin the asymmetrical karyokinetic figures of which so much has been said lately by pathologists, shows also the plaque material abundantly, especially in and near the "whorls." Sections from this growth were stained with fuchsin-picric acid. These irregular plaques take and retain the fuchsin stain deeply, especially the "hyaloid" bodies at the centre of the whorls; but the fuchsin shows what the eosin does not—that there are shining light-refracting granules in and near these plaques. The karyokinetic figures which took the hæmatoxylin stain here take the fuchsin deeply. On the whole, therefore, these malignant epithelial growths show fuchsin bodies which differ from any others which I have seen, but none of the berries are to be found. While I am not disposed to accept the theory of the parasitic origin of these bodies or plaques, I am not inclined to enter into a discussion of their significance further than to say that I believe they are the results of degenerative changes in the cells.

No. 155. Œdematous nasal polypus. One or two berries are seen, and one of them has a nucleus. Some irregular plaques are noted in the bloodvessels.

No. 179. Œdematous nasal polypus. Irregular plaque.

No. 317. Œdematous nasal polypus, which contains *eosinophilous cells*. In places there are structures which resemble berries somewhat.

No. 367. Œdematous nasal polypus, with inflammatory areas. One or two characteristic berries may be seen; these have nuclei.

No. 396. Œdematous nasal polypus. Irregular plaques.

No. 410. Œdematous nasal polypus; girl of fourteen. Some plaques looking as though the material had oozed from connective-tissue cells.

Nos. 456 and 460. Œdematous nasal ploypi with *eosinophilous cells;* show no appearance of plaques or berries.

No. 503. Chronic inflammation of the mucous membrane of the middle turbinated bone. One characteristic berry was seen.

No. 553. Chronic inflammation of the mucous membrane of the inferior turbinated bone. Plaques are seen in the lumina of dilated glands.

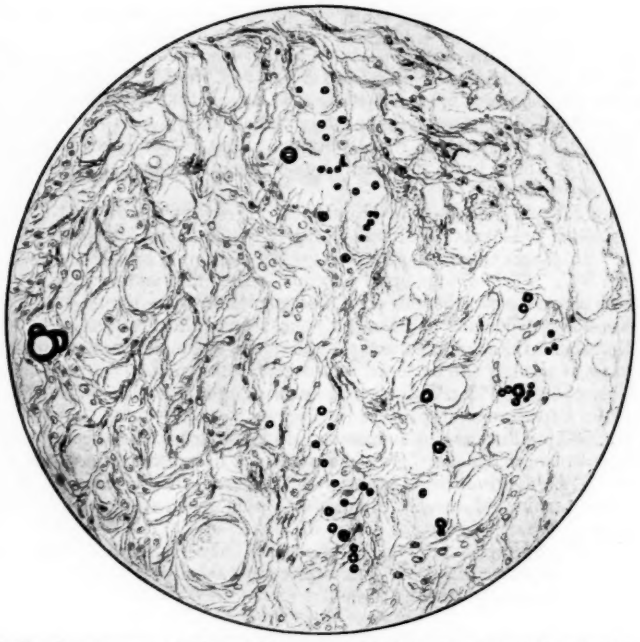
No. 580. Fibrous angioma of the tonsil. In the fibrous tissue there are some irregular plaques. They take the fuchsin stain and appear to be derived from the fibrous tissue.

Having briefly noted suggestive appearances found in a few of the large number of sections of the many and varied growths examined, it is necessary to remind the reader that it would be impracticable to detail all of the accessory observations which have helped me to form a tentative opinion as to the nature and derivation of these berries, so strikingly apparent in Dr. Hinkel's specimen. This opinion can, perhaps, be better explained in connection with the description of certain appearances noted in the following growth:

No. 591. Œdematous nasal polypus. Woman, aged sixty-three years, who gave a history of having had the growths for a good many years.

Microscopic examination shows great degeneration of the stroma and œdematous infiltration. There are some bodies which closely resemble the berries, and these evidently come from the round cells of the connective tissue. They are larger than the latter and do not take the hæmatoxylin stain. The little lobules, which are here so fine that they may be called granules, are not so regularly arranged as in the berries. There are no nuclei to these bodies. The cell membrane seems to have disappeared, but the granules grouped together keep a globular shape, apparently from agglutination. These bodies or cells take the fuchsin stain moderately.

Fig. 2.



Hyaline drops or separate globules taking eosin and fuchsin stains, but not hæmatoxylin. Cam. lucid. obj. ⅙.

In this polyp, however, are seen bodies which I have before occasionally observed, but they have not been so frequently nor so plainly seen as to be studied properly. These are perfectly globular bodies ranging in size from such minute dimensions that they can hardly be seen with the $\frac{1}{12}$ ol. im., to thrice the size of a white blood-cell. They are at all stages perfectly structureless. They lie free in the stroma, sometimes near together in clumps, sometimes singly. Usually

with the $\frac{1}{12}$ ol. im., around one of the larger globules may be seen the exceedingly minute grains. I occasionally can make out one or more of these granules shining in a cell body, all the rest of the cell having lost its fuchsin by the action of the picric acid. When the larger globules happen to lie close enough to one another in the tissues, they impinge upon one another, so that their proximal surfaces are

FIG. 3.

"Hæmatoxylin cells," taking the hæmatoxylin and fuchsin stains, but not the eosin. Cam. lucid. obj. $\frac{1}{6}$.

flattened. They apparently may also be compressed by the impingement of the contiguous structure in the stroma.

After a careful study with various stains it is apparent that these globules free in the tissues are identical with the globules seen in the structures I have called "berries." This brings me, as said above, to the following tentative explanation: From some unknown cause, depending on defective nutrition brought about in the course of inflammatory or

analogous metabolic changes, other parts of the cell body and nucleus lose their vitality. These minute granules under the conditions which have caused death to the other parts of the cell grow abnormally. If two of the granules survive and grow, and the cell membrane is still intact, we will have a bilobed body; if three, a trilobed body, and if many, a multilobed body held together by the cell membrane, which may, however, burst at any stage of the development, and the swollen granules may thus be scattered in the stroma. Where the cell with its membrane has died and become disintegrated and left behind only one or more of these minute granules still alive in the tissues, the latter may begin to grow, and, being unhampered by a cell membrane limiting their own expansion and holding their fellows in apposition, they assume the globular form. I believe the cells which usually furnish these granules are the round wandering cells of the connective tissue. With this explanation it is not difficult to understand why some of the berries may retain enough of the nuclear material to take the hæmatoxylin stain and so furnish a nucleus, while in others none of it has remained.

Certain other phenomena in the histology of morbid nasal growths seem to have a more or less direct bearing upon those just detailed.

Three years ago Dr. John Dunn, of Richmond, sent me a nasal growth from the inferior turbinated body which, on examination, proved to be a very much degenerated hypertrophy of the mucous membrane. Scattered through the stroma were coarsely granular ovoid masses taking the hæmatoxylin stain very deeply, and twice or thrice the size of a white blood-cell. They looked like colonies of micrococci. At that time I was unable even to form a conjecture as to their nature. Simultaneously with the beginning of my study of the "hyaline bodies" I received from Dr. J. H. Bryan, of Washington, an hypertrophy of the inferior turbinated body similar to that from Dr. Dunn, and containing the same bodies deeply stained with hæmatoxylin. They do not take the eosin stain at all, and are thus sharply differentiated from the "hyaline" bodies. They are also more ovoid and the granules are finer than in the "berries" in Dr. Hinkel's case. Stained with fuchsin-picric acid they take the fuchsin color deeply and brilliantly. Some of these bodies were contained in a cell membrane; in some the cell membrane had disappeared. Small, loose granules were seen on the stroma, but in no place was there any evidence of growth of these granules after they had lost their protecting cell membrane. Very little study convinces one that these bodies also are degenerated round connective-tissue cells, which for some reason take the hæmatoxylin stain as deeply in the cell body as they do in the nucleus, and in which certain kinds of granules have greatly increased in numbers, but only moderately in size. When the cell membrane is lost these granules cease to grow. For convenience

sake we may call these hæmatoxylin cells. In examining my collection of slides these or analogous cells were looked for. They were occasionally found, but nearly always in the œdematous hypertrophies of the inferior turbinated bodies.

The cases of Dr. Dunn and Dr. Bryan have already been mentioned

No. 562. Œdematous hypertrophy of the posterior end of the inferior turbinated body shows these hæmatoxylin cells, but they are not so large or so granular as in the specimens mentioned above. They take the fuchsin stain very deeply, much more deeply than do the other cells of the connective tissue.

No. 646. A fibrous hypertrophy of the mucous membrane of the inferior turbinated bone in a syphilitic patient contains the hæmatoxylin cells. They take the fuchsin stain deeply and are coarsely granular. It is noted that the larger these granules are, the less distinctly is the nucleus seen. The cell membrane is not distinct, and in some instances seems to have disappeared. Most of them are ovoid in shape. They are mostly in the stroma, but in places they may be seen among the glandular epithelium. Neither in this nor in any of the other specimens do these hæmatoxylin cells show any karyokinetic figures.

Nos. 566, 571, 589. Œdematous nasal polypi. These show some of the hæmatoxylin cells, ovoid in shape. Some of them, usually very large, are to be seen amidst the detritus in the dilated lumina of the glands. They react as usual to fuchsin.

No. 615. Œdematous nasal polypus. Some ovoid non-nucleated granular cells are present which take the eosin stain. They do not take the fuchsin stain very deeply.

No. 406. Mucous membrane and bony tissue from the inferior turbinated bone in a condition of chronic inflammation. In this specimen are seen large granular nucleated cells, ovoid in shape, situated also in the stroma, but especially in the lacunæ of the bony tissue. They resemble the hæmatoxylin cells in their shape and size, and in the coarseness of the granules, but they take the hæmatoxylin and eosin stains like normal cells. In places there are a number of them together. They take the fuchsin stain moderately.

Nos. 458, 559. Bony cysts of the middle turbinated bone show the same cells.

To sum up briefly the conclusions I have arrived at from the study of these phenomena it may be said: Under the influence of disturbed nutrition some of the elements in the wandering cells of the connective tissue lose their vitality, while certain others take on an abnormal growth.

*A.* "Berries" and "Globules." 1. The granules which in the normal cell body take the eosin stain may grow in size to completely fill the cell membrane, and from the disintegration of the cell membrane may then be scattered; or

2. These granules lying free in the tissues after the disappearance of the cell membrane and the other parts of the original cell may then take on active growth.

In the first instance we have the hyaline bodies which I have called "berries." In the second instance we have the bodies which I have called "globules."

*B.* Material outside of the cells taking similar stains may be found in low-grade fibrous tissue, and especially in the peculiar homogeneous bodies of epitheliomata.

*C.* Under the influence of disturbed nutrition in the wandering cells there may occur, on the other hand, an overgrowth of the granular material which in the normal cell takes the hæmatoxylin stain, increasing in number, but not markedly in size. The nucleus in these cells may be present or absent. There is no evidence that the vitality of these granules survives the disintegration of the cell membrane.

*D.* While in both of these varieties of cellular degeneration the material of the granules takes the fuchsin stain deeply, they differ in their reaction toward the hæmatoxylin stain.

In the preceding account I have purposely avoided reference to the works of others concerning these phenomena which have of late attracted considerable attention. Some confusion has arisen because of the impossibility of identifying the structures spoken of by the various writers, and because it is not always clear as to whether the discussion refers to the "hyaline" or "colloid" material or to the biological structures in which it occurs. It has, therefore, seemed best that I should only detail above my own observations and conclusions, but any one familiar with the previous literature of the subject will easily perceive to what extent these have been influenced by the contributions of Thorel, Hansemann, Polyak, Stepanow, Seifert and Kahn, and others.

The "hyaline" bodies which I have called "berries" have been most frequently found and studied in polypi of the stomach and intestines, especially in adenomatous growths of the mucous membrane of these organs.

Thorel found them more abundantly according to the degree of inflammatory changes. He is of the opinion that they are due to the development of the granules in degenerated cells. As has been seen, I have come to the same opinion. Hansemann also found them constantly in growths of the stomach after his attention had been once drawn to them. He also believes them the product of cellular degeneration. Polyak seems to have had an experience similar to my own. After having examined a large number of nasal neoplasms without noting their occurrence, he found that in a case of "papillary and polypoid hypertrophy" of the mucous membrane these bodies were present in

very large numbers. In both sides of the nose in this case there existed growths (on one side a papillary hypertrophy of the mucous membrane of the inferior turbinated bone, in the other side œdematous polypi of the middle turbinated region), which were found on microscopic examination to contain these bodies. He used various stains, but came to practically the same conclusions as other authors in regard to their origin from cellular degeneration; but among his other deductions he is somewhat positive that the material in them is identical with the "colloid" of struma or goitre. Seifert and Kahn, in their beautiful *Atlas of the Histopathology of the Nose* (Taf. II., Fig. 4), show what are apparently the hyaline bodies (berries) as well as cells which I have called hæmatoxylin cells, occurring in a specimen from a case of acute rhinitis. A more extended study of the histology of this condition of the nasal mucous membrane might do much to elucidate the subject of the hyaline degeneration of cells.

Stepanow's investigations, dating back to 1891, seem to have convinced him that bodies similar to those found in rhinoscleroma are to be observed in various nasal growths, such as polypi, hypertrophies, adenoids, etc.

Other contributions to the literature of the subject which I have not read in the original are also noted below.

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# REVIEWS.

TRAITÉ DE CHIRURGIE CLINIQUE ET OPÉRATOIRE. Publie sous la direction de MM. A. LE DENTU et PIERRE DELBET. Tome sixième; 8vo, pp. 952. Paris: J. B. Bailière et fils, 1898.

TREATISE ON CLINICAL AND OPERATIVE SURGERY. By LE DENTU and DELBET.

A SURGERY which has extended to six volumes of nearly a thousand pages each, with a number more to come, may reasonably be expected to be complete. Like almost all French books, it is impossible to find in it any special topic about which one wishes to consult it, in view of the fact that there is no index. But in looking somewhat carefully through its pages, especially to see whether some important and particularly some recent subjects have been at all fully treated, we must confess to not a little disappointment. For instance, Tumors of the Sternum, which in an encyclopedic work like this should certainly receive a full consideration, are merely touched upon. The whole subject of Tumors of the Thoracic Wall, including those of the soft parts and of the bones, is dismissed in three pages. So, too, Tumors of the Mediastinum have less than two pages, while Hernia of the Lung occupies nearly ten. Diverticulum of the Œsophagus, the operative treatment of which has received considerable attention of late years, is fully considered and proper treatment given. Under the heading of Foreign Bodies in the Œsophagus, the whole matter of diagnosis by means of the Röntgen rays is dismissed in eight lines. It begins: "Finally, Aragon has recently taken advantage of radiography in order to discover the presence of a coin fixed in the œsophagus in a child." As if Aragon were the first and, indeed, the only one, who had ever done so. Not even an allusion is made to the scores of cases reported in the journals of all countries both before and since Aragon's use of it. Not a word is said about the ingenious method of removing such bodies as published by White and Wood in 1896. Inasmuch as this volume bears the imprint of 1898, it surely should cover the literature of 1896. Under Foreign Bodies in the Larynx, nothing is said in reference to the use of the x-rays.

Naturally, one of the topics a reviewer would look at is the modern surgery of the alimentary tract. A system as large as this should give one all necessary information, including operative procedures, sufficiently well illustrated to enable any surgeon to perform such operations. Yet we find that under Gastrostomy (where he misspells the name Egberg), there are less than six pages, and among the operative procedures the only one described at length and illustrated by a single cut is that of Terrier, which nobody does at the present time. There is not a single illustration of either of the methods of Witzel or Ssabanajew-Frank. Even the operation of Witzel is wrongly described, the procedure of

Marwedel being the one described under this name, though Marwedel's name is not mentioned.

The chapter on the Treatment of Goitre is modern, and is good, with one exception. The recent operations of Jaboulay and Jonnesco, of resection of the cervical sympathetic for exophthalmic goitre, are mentioned, though no reference is made to the earlier work of Alexander on the same nerve in epilepsy. Jonnesco especially has insisted on the difficulties of removing the inferior ganglion of the sympathetic, and has copiously illustrated his own papers on this subject in order to help the surgeon. Not a single cut, nor any such detailed description which would enable the surgeon to avoid the dangers and accomplish the result in view, is given.

The want of an index is very well illustrated in reference to Cervical Ribs. If one wishes to hunt up what is said on this subject he will find in the *Table des Matières*, under Diseases of the Neck, Section 5, Tumors of the Neck, Part I., Solid Tumors; and then, on reference to the text, will find among others mentioned Osseous Tumors, and among these Cervical Ribs. Pathologically, surely a cervical rib is not an "osseous tumor." If one desired to look up what was said in reference to such anomalies of development, the last title under which he would look would be "Osseous Tumors." Similarly, should one desire to consult this work on Fistulæ of the Neck, and Persistent Thyreoglossal Duct, the only probable title in the table of contents is "Liquid Tumors of the Neck;" and on turning to this, while considerable is said as to congenital cysts, and there is a short paragraph on the relation of these cysts to the lymphatic system, not a word is said as to the congenital fistulæ, and not a word as to the thyreoglossal duct. Under Diseases of the Tongue we do find a discussion of the latter, but we have been unable to ferret out anything about branchial fistulæ.

There is a great deal in this book that is good; but on the whole it is disappointing. Much of it is diffuse; little of it can be referred to by a busy man at a moment's notice; and what is omitted is more striking than what is found. Although the book contains nearly a thousand pages, and is called a "Treatise on Surgery, both Clinical and Operative," yet in all these pages illustrating pathology, pathological and normal anatomy, and operative procedure, there are only a little over a hundred cuts, and most of these are poor.

W. W. K.

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ATLAS AND ABSTRACT OF THE DISEASES OF THE LARYNX. By L. GRÜNWALD, of Munich. Authorized Translation from the German. Edited by CHARLES P. GRAYSON, M.D., Lecturer on Laryngology and Rhinology in the University of Pennsylvania; Physician-in-Charge of the Throat and Nose Department, Hospital of the University of Pennsylvania. With 107 colored figures on 44 plates. Philadelphia: W. B. Saunders, 1898.

THIS is an excellent practical handbook, giving the main points in the diagnosis, pathology, and treatment in the various diseases of the larynx, and without any elaboration, the colored plates being very effectively drawn and nearer to nature in tint than most of those seen in recent publications. The descriptions accompanying the plates are admirable, concise, and sufficient. The translation is in good English.

J. S. C.

DIE STÖRUNGEN DES KREISLAUFS UND IHRE BEHANDLUNG MIT BADERN UND GYMNASTIK. Von DR. S. CH. GRAUPNER, Arzt in Bad Nauheim. Pp. 158. Berlin: S. Karger, 1898.

DISORDERS OF THE CIRCULATION AND THEIR TREATMENT BY BATHS AND GYMNASTICS. By GRAUPNER.

THIS work seeks for the physiological explanation of the results obtained in the treatment of diseases of the circulation by the methods employed at Nauheim—baths and gymnastics. Believing that the vagus is the trophic nerve of the heart, and disputing the axiom frequently encountered, that increase of heart work of itself tends to tissue improvement, the author travels over the well-beaten road toward the end of demonstrating the value of the methods now thoroughly vulgarized in medical literature. To be sure, his treatment of the subject is often novel and his conclusions somewhat diverse from those commonly met with. While agreement may not be reached as to the way by which results are obtained at Nauheim, all authors writing from the stand-point of the bath-physician claim that benefit is derived from them. Most seem to attribute much to local influences, as if physiological laws were modified at Nauheim. The position of these extremists is rendered untenable by recent investigations, which tend to show that gymnastics are more potent than baths, and it would be further than a partisan would care to go to assume that well-known gymnastic principles are only of local application. In comparison with much that has been written upon this subject—and we have especially in mind a British production—this book has made a substantial advance, and we trust that such studies will continue until theories shall rest upon a substantial basis, accepted by all, and the treatment escape from empiricism. We have seen much good result from the methods practised at Nauheim, but too dogmatic and inflexible rules savor of suggestive therapeutics.

R. W. W.

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HANDBUCH DER ANATOMIE DES MENSCHEN. Von PROF. KARL VON BARDELEBEN, in Jena. V. Band, II. Abtheilung: 1. Das Aussere Ohr, von Prof. W. G. Schwalbe, in Strassburg. 2. Mittelohr und Labyrinth, von Prof. W. F. Siebermann, in Basel. Jena: Verlag von Gustav Fischer, 1898.

HANDBOOK OF HUMAN ANATOMY. THE EAR. By KARL VON BARDELEBEN.

IT is hardly possible to praise too highly this part of Von Bardeleben's *Human Anatomy*. The first division of the second part of the fifth volume is on the External Ear, by Schwalbe, and is illustrated by thirty-five partly colored engravings, incorporated in the text, which consists of seventy-four pages. It is marked throughout by clearness and accuracy, and is as instructive as anything short of dissection can be. The second division of this same volume is on the Middle Ear and Labyrinth, by Siebermann, a celebrated author upon the anatomy of the internal ear. It consists of 137 pages. The comparative anatomy of the ear and the methods of making corrosion preparations of the ear are given first, and then the anatomy of the middle ear and of the laby-

rinth are given most elaborately and most attractively, with 66 partly colored illustrations, incorporated in the text. It is, indeed, difficult to say which of these illustrations is the most beautiful and most graphic. We would like, however, to draw attention to Fig. 31, on page 254, illustrating a corrosion preparation of the entire middle ear, as being especially instructive. Among the illustrations of the labyrinth Fig. 62, showing the entire membranous labyrinth, and Fig. 65, delineating a horizontal section through the right cochlea, deserve especial mention for their beautiful, delicate, and instructive drawing and coloring. The text of this work is useful only to the German scholar, but the illustrations are worth the price of the fasciculus to any student of anatomy. Authors and publishers deserve our highest praise for the way they have discharged their respective duties. C. H. B.

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THE CÆCAL FOLDS AND FOSSÆ AND THE TOPOGRAPHICAL ANATOMY OF THE VERMIFORM APPENDIX. By RICHARD J. A. BERRY, M.D., F.R C.S., F.R.S. Edin., Lecturer on Anatomy, etc. 8vo, pp. 75, 17 plates. Edinburgh: Wm. F. Clay, 1897.

THIS monograph contains the results of a systematic and scientific study of some of the anatomical relations of the cæcal and appendicular region. While the folds and fossæ are primarily of interest to the anatomist, the surgeon has much need of correct information concerning this region. The photographic plates from original specimens are most valuable additions to the text. The author has epitomized the opinions and results of other writers. These, added to his own observations, make the little volume a contribution of marked value. His effort to simplify classification and nomenclature is certainly laudable. His previous contributions on the Anatomy of the Cæcum and Appendix and on the Pathology of the Appendix, show how carefully he has studied this region of the body.

His remark about the retro-colic fossæ will bear quotation: "Surgically the fossæ are of the greatest practical importance. Every surgeon should be perfectly familiar with their anatomy, because, should he persist in attempting to remove a chronically inflamed appendix, buried in adhesions and lying in one or another of the retro-colic fossæ, he may be sacrificing the life of his patient to a lack of knowledge."

Among his conclusions are these: "The pericæcal folds are primary in origin and vascular in function. The ileo-colic and ileo-cæcal folds together represent the mesentery of the cæcum, the meso-appendix being the true appendicular mesentery." . . . "The meso-appendix is constantly present and is normally situated in about 75 per cent. of cases. When normal it is quadrilateral in outline; when abnormal it may assume almost any shape or situation. In 6 per cent. of its abnormalities the meso-appendix is so placed as to anatomically predispose the subject to appendicitis.

"The meso-appendix envelops the appendix throughout, and may be the seat of an internal hernia or the cause of an intestinal obstruction."

J. B. R.

ATLAS OF METHODS OF CLINICAL INVESTIGATION, WITH AN EPITOME OF CLINICAL DIAGNOSIS AND OF SPECIAL PATHOLOGY AND TREATMENT OF INTERNAL DISEASES. By DR. CHRISTFRIED JAKOB, formerly First Assistant in the Medical Clinic at Erlangen. Authorized translation from the German. Edited by AUGUSTUS A. ESHNER, M.D. Professor of Clinical Medicine in the Philadelphia Polyclinic; Physician to the Philadelphia Hospital, etc. With 182 colored illustrations upon 68 plates, and 64 illustrations in the text. Philadelphia: W. B. Saunders, 1898.

THE mode in which the title of the heathen deity, Atlas, came to be transferred to a bound collection of maps or plates is of great interest from a philological stand-point, but does not immediately concern us. Suffice it to say that the term Atlas applied to this work is somewhat misleading, inasmuch as it is commonly used to designate unwieldy and expensive folios, whereas neither of these adjectives can be employed in connection with this admirable manual of Dr. Jakob. With the original some of us are already acquainted, but this does not diminish our obligation to the editor and publisher who have introduced it in the vernacular to the mass of students and practitioners.

This is a book which stimulates the young student and practitioner to renewed diligence in the clinical investigation of disease and causes the veteran to regard his antique microscope with affection and to make resolves, never to be fulfilled, concerning its future employment.

It is difficult to select any of the numerous illustrations for special commendation, for they are all excellent. To the writer the plates illustrating the blood in health and disease, the blood spectra and the blood parasites, seem especially noteworthy; while to others, doubtless, the same would be true with reference to the color reactions of the gastric juice, the crystalline and organized sediments of the urine, or the microscopy of the sputum.

The plates are admirably supplemented by the Epitome of Clinical Diagnosis, and the entire work, index included, is contained in a small octavo of 259 pages. F. P. H.

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PRAXIS DER HARNANALYSE. ANLEITUNG ZUR CHEMISCHEN UNTERSUCHUNG DES HARNS, NEBST EINEM ANHANG, ANALYSE DES MAGENINHALTS. Von PROF. DR. LASSAR-COHN. Hamburg und Leipzig: Leopold Voss, 1898.

PRACTICAL GUIDE TO URINALYSIS, WITH AN APPENDIX ON THE ANALYSIS OF STOMACH-CONTENTS. By PROF. LASSAR-COHN.

IF we thought the author possessed a sense of humor, we should consider this a satire on the medical profession. There are dozens of books in every civilized language on the analysis of urine, fully covering the chemical, pathological, and clinical questions involved. Medical graduates are supposed to have the essentials as given in this booklet at their finger-tips. Yet the fact remains that many physicians rarely, and some never, use these manipulations in practice. The author intimates that this is true of Germany, and we hope he is right in concluding, from the rapid sale of the first edition, that his book will change all that. In plain and untechnical language, aside from a couple of simple chemical

formulæ, he gives tests for albumin (heat and acetic acid), glucose (Trommer's), aceton (Legal's), aceto-acetic acid (Gerhardt's), bile (Gmelin's), urobilin (Jaffe's), blood (Heller's), indican (Jaffe's), sulphates, conjugate sulphates, phosphates, and ammonia. Quantitative tests are given for albumin (weighing and Esbach's), sugar (Fehling), and total and combined sulphates. The appendix describes Günzburg's test, the lactic-acid test with chloride of iron, and artificial digestion. There is no attempt at clinical explanations and very little suggestion of chemical principles. The directions for making artificial abnormal urines might be useful for those who never studied chemistry. Not without interest are the advertisements of the work printed on the cover, containing laudatory reviews from pharmaceutical and chemical journals. G. D.

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AN AMERICAN TEXT-BOOK OF GENITO-URINARY DISEASES, SYPHILIS, AND DISEASES OF THE SKIN. Edited by L. BOLTON BANGS, M.D., and W. A. HARDAWAY, A.M., M.D. Pp. 1229. Illustrated with 300 engravings and 20 full-page colored plates. Philadelphia: W. B. Saunders, 1898.

THE work is divided into two parts, nearly 800 pages being devoted to genito-urinary diseases and syphilis, and over 400 pages to diseases of the skin. The reason for considering in a text-book two subjects so dissimilar as genito-urinary diseases and cutaneous diseases has never been satisfactorily explained. It has been done in the past, and is still done in the present, as the volume under notice testifies; but we deplore the fact, for the reason that the subjects have so little in common either from a scientific or a practical aspect. We believe that authors generally are opposed to the amalgamation of these two departments of medicine. The publishers, however, view the matter differently, with the result that the subjects still continue to be discussed together in the same volume, to the detriment of both.

In the present case the work has been well done by all who have contributed to the volume, which may be said to contain a series of practical monographs on all the diseases which pertain to the two specialties. Dr. Bangs, in connection with genito-urinary diseases, and Dr. Hardaway, with diseases of the skin, are both most favorably known through their labors in the past, and in editing the volume before us they have shown both good judgment and skill. The contributors to genito-urinary diseases comprise Paul Thorndike, on "Urine Analysis, and a Consideration of the Urine in Surgical Diseases of the Urinary Tract;" B. Farquhar Curtis, "Diseases of the Penis;" G. Frank Lydston, "Diseases of the Male Urethra;" Eugene Fuller, "Diseases of the Testicle and its Coverings, the Cord, and the Seminal Vesicle;" J. William White, "Diseases of the Prostate;" Edward Martin and A. E. Taylor, "Diseases of the Bladder;" Francis S. Watson, "Vesical Calculus;" Christian Fenger and S. C. Stanton, "Diseases of the Ureter;" P. R. Bolton, "Surgical Diseases of the Kidney;" James Pedersen, "Functional Disorders;" James S. Howe, "Acquired Syphilis;" Lewis C. Bosher, "Syphilis of the Bones, Joints, Bursæ, Tendons, and Muscles;" J. H. Linsley, "Syphilis of the Respiratory, Circulatory, Lymphatic, and Alimentary Systems;" Graeme M. Hammond, "Syphilis of the Nervous System;" Thomas R. Pooley, "Syphilis of the Eye;"

Abraham Jacobi, "Hereditary Syphilis;" Robert Holmes Greene, "Treatment of Syphilis;" and James S. Howe, "Chancroids." Thus we note a long list of names, all of the writers being well qualified to discuss the topics allotted to them. It would be unjust to single out articles for special remark, because most of them are admirable, but that on Urethritis (a test chapter) is particularly attractive. We are sure that no physician can read any of the monographs without becoming acquainted with the newest observations in the field discussed. Drs. White and Wood give a valuable exposition of the diseases of the prostate, a subject to which Dr. White has made valuable contributions, the operation of prostatectomy being elucidated *in extenso*. The several aspects of this operation, pro and con, are presented with remarkable fairness. The conclusion is reached that castration for hypertrophied prostate has passed the experimental stage and has established for itself a place among legitimate operative procedures.

The part of the work devoted to diseases of the skin is as well done as that part already considered. Such well-known observers and dermatologists as have labored in this department could not fail to produce admirable results in the way of short, practical monographs on the more important diseases. The chapter on "Eczema," by Dr. Hardaway, is well written, and bears the stamp of a practical writer who loses sight of nothing that bears on the general pathology, etiology, and treatment of the disease. John T. Bowen writes clearly on the "Anatomy and Physiology of the Skin," and Charles W. Allen contributes "General Symptomatology," and D. W. Montgomery "General Etiology, Pathology, and Diagnosis." I. E. Atkinson, C. W. Allen, D. W. Montgomery, A. R. Robinson, J. M. Winfield, H. G. Klotz, M. B. Hartzell, W. A. Hardaway, and Joseph Grindon all share in ably handling the various inflammatory diseases. John T. Bowen writes on the "Hemorrhages," and J. Abbott Cantrell and E. J. Stout and F. J. Shepherd contribute the chapter on the "Hypertrophies." Condict W. Cutler writes the chapter on "Atrophies," while that on the "Neoplasmata" is mainly in the hands of James C. Johnston, S. Pollitzer, R. W. Taylor, J. A. Fordyce, Isadore Dyer, A. R. Robinson, and H. Tuholske. The chapters on the "Diseases of the Appendages" are contributed by Louis Heitzman, A. R. Robinson, George T. Jackson, H. N. Lyon, and W. T. Corlett. The articles on the "Parasitic Diseases" are from the pens of W. T. Corlett and A. E. Regensburger. We have looked over this portion of the volume with attention, and find the work done to be as satisfactory as it is possible to be where so many authors are concerned in its elaboration. As in all so-called "Systems," the chapters are really short monographs with no special relation one with another as to views on general pathology or treatment. The result, nevertheless, gives a practical volume, which is undoubtedly valuable and useful. The book as a whole is a large, ponderous, and handsome volume, illustrated (but not very fully, compared with other similar books of the day) with drawings, photographs, and colored plates. Most of the latter are rather poorly executed and fail to depict the diseases as well as they should do. Those on the syphilodermata are altogether inferior, and are unworthy a place in a volume so handsomely got up in other respects. We congratulate the editors and the contributors upon the successful completion of so great an undertaking, and bespeak for the volume a large circulation.

L. A. D.

THE PSYCHOLOGY OF SUGGESTION: A RESEARCH INTO THE SUBCONSCIOUS NATURE OF MAN AND SOCIETY. By BORIS SIDIS, M.A., Ph.D., Associate in Psychology at the Pathological Institute of the New York State Hospitals. With an introduction by PROF. WILLIAM JAMES, of Harvard University. New York: D. Appleton & Co., 1898.

RECENT psychology has an abundant literature. Wundt, James, and its other distinguished exponents should be gratified by the activity of their many disciples. The book before us is one of the best outcomes of this activity. It differs from many books on the same and similar subjects in its method of discussion. It is also original in some of the points of view taken by the author.

This book commends itself not only to psychologists, but also to physicians, and especially to alienists and neurologists, for whom it contains many suggestions, both as to the nature of some diseases of the nervous system and also as to their diagnosis, prognosis, and treatment. In this connection, one of its most practical aspects comes out in the discussion of the types of amnesia. The author shows, for instance, that amnesia may be normal and merely temporary and functional; or it may be irretraceable and curable; or it may be absolute and incurable, and more than this, he believes that he can demonstrate that it is possible, by making use of the methods of the psychologist, to differentiate these forms of amnesia, to refer them to their anatomical and physiological bases, to separate the curable from the incurable, and to treat the latter by special methods which arise out of investigations into the psychical nature of the subjects of the amnesia. The cases which he adduces to illustrate this position are of great interest, and in most respects convincing.

Another of the practical aspects of the work is where the author considers the relations of the subconscious to insanity, showing, as he believes, how in hypnotic and post-hypnotic conditions we hold the keys to the forms of conceptional and impulsive insanity. The nature or mechanism of imperative concepts, insistent ideas, and uncontrollable impulses is best understood by a study of conditions of normal and abnormal suggestibility and comparative studies of the conscious and subconscious self. It is held that those forms of insanity which are exhibited by insistent ideas, imperative concepts, irresistible impulses, and changes of personality have at their basis a disaggregation of consciousness, a dissociation of the primary and secondary subconscious selves. While we are not prepared to fully admit this thesis, the view is a highly suggestive one, and points the way to the proper study of the abnormal mental phenomena of these disorders. The methods adopted by Sidis for testing the subconscious memories, and of treating cases of amnesia, are worthy of the practical physician's attention. He also refers to methods used by him to run together into one the alternating personalities which are exhibited by some of the most extraordinary of the amnesic cases.

We have referred to some of the practical aspects of this book first because we are addressing ourselves to medical readers. The entire work is, however, worthy of careful and close reading. Occasionally diffuse and repetitive, the author is, as a rule, direct and lucid. In some places he shows an unusual facility in making clear some of the abstruse terms and propositions of modern psychology. Nowhere have we seen a clearer presentation of the true meaning of suggestion and suggestibility. He defines suggestion as the intrusion into the mind of an idea;

met with more or less opposition by the person; accepted uncritically at last; and realized unreflectively, almost automatically.

The book has a brief but interesting introduction from the pen of Prof. William James, in whose laboratory at the Harvard University much of the work embodied in the book was done.

Sidis has an interesting but just comparison of the merits of the German and French schools of psychology. As he states, the French care more for clinical cases than for the minute laboratory experiments which are so dear to the heart of the German. The German concept of the subconscious has been vague, and has rather the character of a mechanical than of a psychical process. The German results have been aptly characterized by James as the "elaboration of the obvious." The English and Americans, as well as the French, have worked along the lines of the subconscious with more insight if not in some directions with the same thoroughness as the Germans.

In Chapter III. Sidis discusses the subject of especial interest to the physician engaged in neurological practice—the treatment of nervous diseases in general, mental diseases, and those affections which are often referred to as on the borderland between sanity and insanity. He starts out with the dictum "that every man in his full, normal, waking state is more or less suggestible."

Normal suggestibility is directly the opposite of abnormal suggestibility; in the latter it varies as direct suggestion and inversely as indirect suggestion — that is, in abnormal subjects, as those suffering from grave hysteria or under hypnosis, the more direct the suggestion the more probable it is that it will be carried out; while in the former it is inversely as direct, and directly as indirect suggestion. The normal man does not do what is suggested to him directly, either because he has too much sense or because he is too obstinate to follow the suggestion. The conditions of abnormal suggestibility, which are the same as those of hypnosis, are (1) fixation of attention; (2) monotony; (3) limitation of voluntary movements; (4) limitation of the field of consciousness; and (5) inhibition.

Sidis devotes a large part of one chapter to combating the sufficiency of Carpenter's doctrine of unconscious cerebration to account for the phenomena of hypnotic memory. His arguments on this score, while interesting, are scarcely of a convincing sort, and seem in some parts like a substitution of assertions for a more tangible hypothesis. To say that the phenomena are not a result of unconscious cerebration, but simply evidences of the existence of another self, is not an explanation of the phenomena.

Some of the interesting records of double and triple personality, both as exemplified in hypnotic subjects and in the records of unusual cases of periodic amnesia, are reproduced, and the subject of automatic writing and its bearing on the problems under discussion is considered.

He holds that much evidence can be adduced to show the presence of a subwaking self in a normal individual; that the state of cleavage of personality and consciousness takes place not only in those who are hypnotic, but is more or less demonstrable in all normal individuals.

Part III., which applies the facts and theories of suggestibility to the study of society, will be found of interest to the general reader as well as to the student of psychology and psychiatry.

We can cordially commend this book to all who wish to keep pace with the most valuable of recent additions to psychological literature.

C. K. M.

# PROGRESS

OF

# MEDICAL SCIENCE.

## THERAPEUTICS.

UNDER THE CHARGE OF

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**The Use of Pyramidon in Diseases of the Nervous System.**—Dr. Rudolf Landenheimer reports upon the use of this antipyrin derivative in more than one hundred instances during the past year. In headache of undetermined origin, especially when occurring during convalescence from psychoses, five to eight grains gave relief after the lapse of one hour to two hours. It was equally successful in the headaches of alcoholics. In hysteria the results were uncertain, but for nervous men, those overworked and sleepless, the remedy gave satisfaction. The pain of alcoholic neuritis was not benefited, although the sensitiveness of the nerve-trunks was lessened. Of lumbago, two instances were benefited, a third unaffected by even large doses. Only two patients suffering from acute articular rheumatism came under observation. The pain speedily lessened, the swelling gradually disappeared. Chronic rheumatism was not benefited. The lancinating pains of tabes were temporarily benefited. The maximum dose given above can be safely administered thrice daily. Untoward symptoms have not been noticed.—*Therapeutische Monatshefte*, 1898, Heft 4, S. 177.

**Oil of Salosal in Urinary Diseases.**—Dr. Oscar Werler, having ascertained that salol is soluble in Bombay oil of salosantal to 33 per cent., proposes the name given above for the combination. The dose employed is from ten to twenty drops after each meal in a tablespoonful of sweetened water. This can also be administered in gelatin capsules. Salol, according to Arnold, renders alkaline uric acid, removes the foul odor, diminishes its purulency, increases the quantity, and does not interfere with digestion. Ten instances of the use of the remedy are reported. Its advantages are that (1) it is not only antiseptic, but as well analgesic. (2) It is equally effective in alkaline as in acid urine. (3) It is diuretic. (4) It is not expensive. Its contra-indications are acute and chronic nephritis, gastric indigestion, and those

who do not tolerate balsams. Its indications are (1) in affections of the urethra and bladder which are characterized by sensitiveness when injections and irrigations are not possible. (2) Acute exacerbations and complications, with painful and severe inflammatory reactions, for which antiphlogistic, antispasmodic, and sedative remedies must be applied. (3) Instances of chronic vesical catarrh with alkaline, ammoniacal urine, as well as those in which the urine is acid when an antiseptic is needed. (4) Instances of obstinate and chronic gonorrhœa when not only a parasiticide but an anti-catarrhal remedy is indicated.—*Therapeutische Monatshefte*, 1898, Heft 5, S. 266.

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**The Treatment of Incontinence of Urine in Children with Rhus Aromatica.**—Dr. Ludwig Freyberger makes use of a fluid extract of the fragrant sumach of America. This was first used in the treatment of incontinence of urine caused by an atonic state of the bladder. Burvenich believed that it was a powerful tonic for the bladder, acting similarly to nux vomica. According to Numa, it stimulates the unstriped muscle of the bladder as well as that of the uterus and rectum. During the past three years one hundred and ten instances of enuresis have been under observation. Leaving out those in which the symptom was due to phimosis, preputial adhesions, hypospadia, urinary hyperacidity, cystitis, nephritis, or glycosuria, there remained altogether sixty instances of the use of this drug. Of these, thirty are tabulated, because a sufficiently long time has elapsed since their discharge (nine months to two years) to enable an opinion to be given as to a permanent cure. Patients who had previously received belladonna, strychnine, or tonics without success were at once put upon this treatment. Others underwent a preparatory treatment, which consisted of regulation of the diet, sleeping upon a hard mattress, the use of light coverings, and cold sponging along the spine. The children were taken up once or twice during the night and made to pass water. The formula is: Fluid extract of rhus aromatica, 1; aromatic syrup, 2; distilled water, 6, which conceals the astringent taste and disagreeable odor. The dose varies from five to ten minims (two to five years); ten to fifteen minims (five to ten years), with a maximum of twenty minims for older children. Of the thirty instances recorded, twelve boys and eighteen girls, cure followed in eighteen, eleven boys and seven girls; improvement in ten, one boy and nine girls; and no improvement in two girls. "Cure" is intended to mean that at least nine months have elapsed since enuresis has occurred for the last time. The average duration of treatment was thirty-four days in boys and forty-five in girls. Thirty-three days, on an average, were sufficient to produce a permanent cure, fifty-three to effect a permanent improvement. It would be rash to claim this remedy as a specific, but it certainly appears to be as efficacious as belladonna, may be given for a long time without the slightest ill effect, and good results may be obtained when the latter proves ineffective.—*Treatment*, 1898, No. 5, p. 129.

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**The Value of Certain Drugs in the Treatment of Gout.**—Dr. Arthur P. Luff states that the treatment of this disease by alkalies is mainly based on the assumption that uric acid is present as such in the blood and tissues,

and is rendered soluble by the administration of alkalies, that uratic deposits of sodium biurate are dissolved by alkalies, and that the system of a gouty person is pervaded by a general acidity which is neutralized and removed by alkalies. With regard to the first assumption, it is now well known that in gouty subjects uric acid is never present as such in the blood and tissues, but is always combined with sodium as the quadriurate or biurate. The only way in which alkalies could beneficially affect the quadriurate would be to delay its conversion into the biurate. Experiments with an artificial blood-serum to which potassium carbonate, potassium citrate, lithium carbonate, lithium citrate, sodium bicarbonate, sodium phosphate, piperazine and lysidin were added in solution showed that this conversion is not delayed. The following do not in the slightest degree increase the solvent power of the blood for gouty deposits: Potassium carbonate, potassium citrate, lithium carbonate, lithium citrate, sodium phosphate, piperazine and lysidin. Sodium bicarbonate slightly decreases the solvent power of the blood for gouty deposits. The assumption that in connection with gout there is a general acidity of the system which causes a diminished alkalinity in the blood is opposed to the results of recent investigations upon the subject. Klemperer showed that the alkalinity in the blood in gout is very little, if at all, diminished, and that corresponding variations in the alkalinity of the blood may frequently be met with in healthy individuals. Morefor sodium biurate. Experiments with sodium salicylate show that it has over, a diminution of the alkalinity of blood-serum containing uric acid in does a diminution in the alkalinity of blood-serum diminish its solvent power solution does not facilitate the deposition of sodium biurate from it, nor no direct action either in delaying the decomposition of sodium quadriurate or in effecting a solvent action on deposits of sodium biurate. The supposed solvent effect of sodium salicylate for gouty deposits does not, therefore exist. The correct explanation of the increased elimination of uric acid in the urine during the administration of sodium salicylate is that salicylic acid unites readily with glycocine, and so conveys an increased amount of that body to the kidneys, where, by its combination with urea, an increased amount of uric acid is necessarily formed. This increased formation of uric acid is directly detrimental to gouty subjects, and on that account the salicylates are contraindicated in that disease. The general conclusions are that the ordinary alkalies, lithium salts, piperazine, and lysidin are useless, and sodium salicylate is also apparently contraindicated in gout.—*The Lancet*, 1898, No. 3902, p. 1606.

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**The Melaleuca Viridiflora.**—M. DUBOUSQUET-LABORDERIE calls attention to this tree, which is found in New Caledonia, from which an essence is obtained resembling that of eucalyptus. In pulmonary tuberculosis, administered by the stomach in dose of ten capsules (each four grains) daily, it gives rise to no disturbance. An oily emulsion of 2 per cent. strength can be given hypodermatically. In this disease cough, expectoration, and fever cease and the weight increases. In coryza and tonsillitis, inhalations produce remarkable sedative effects. In diseases of the urinary apparatus excellent results have been obtained. In one instance albuminuria disappeared. In cystitis and prostatitis, irrigation with a 2 per cent. aqueous

solution is advised. For rheumatism and neuralgia local frictions are recommended. For wounds a 5 per cent. solution, for burns double this strength, produces an agreeable coolness and hastens healing.—*Revue de Thérapeutique Médico-Chirurgicale*, 1898, No. 12, p. 407.

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**Clinical Observations upon Kryofine.**—Dr. M. A. Shlenker has employed this drug for seven patients, whose histories are reported. As an antipyretic it acts within an hour after its administration, and its effects last for at least three hours. As an analgesic it is equally good or superior to antipyrine or phenacetin, and seems to be well borne by the stomach. In hysteria and neurasthenia it gives restful sleep. The dose varies from seven to fifteen grains, but seventy-five grains have been given without producing death, although with such an amount there is marked depression.—*Atlantic Medical Weekly*, 1898, No. 20, p. 305.

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**Peronin.**—Dr. Meltzer concludes that (1) this remedy (benzyl-morphine), in dose of from two-thirds to one and one-half grains, acts similarly to morphine, but is free from any unpleasant after-effects. (2) Its place, as concerns its hypnotic action, is between morphine, on the one side, and such hypnotics as paraldehyde, amylene hydrate, sulphonal, and trional, on the other. Its disadvantages are its difficult solubility and its unpleasant taste. The first can be remedied by its mixture (not solution) as follows: Peronin, 2; saccharin, 0.5; spirit of wine, 100; and water, 900. This must be thoroughly shaken before the dose is taken from the bottle. As for the second objection, it is not more unpleasant than the above-named hypnotics.—*Therapeutische Monatshefte*, 1898, Heft 6, S. 316.

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**Eucaine-B in General Surgery.**—Dr. Giuseppe Cipriani claims that this is not irritating to mucous membranes, nor does it produce an inconvenient hyperæmia. He employs solutions varying in strength in from 2 to 6 per cent. With these, when the operation is of short duration, he can avoid general anæsthesia in persons suffering from cardiac disease.—*Therapeutische Monatshefte*, 1898, Heft 6, S. 331.

M. A. Legrand makes use of a 2 per cent. solution in distilled water (solution by boiling), which is stable. He concludes that: (1) It is a good local anæsthetic, about three and one-half times less toxic than cocaine, and produces as quickly as complete an anæsthesia as the latter, but of shorter duration. (2) In inflamed tissues the results are as uncertain as from cocaine. (3) It is a vaso-dilator. (4) It produces upon mucous surfaces and in wounds a disagreeable burning sensation which generally appears about twenty-five minutes after anæsthesia, and may last an hour and a half.—*Les Nouveaux Remèdes*, 1898, No. 11, p. 224.

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**A Clinical Study of Kryofine.**—Drs. Sidney V. Haas and J. Bennett Morrison report that this substance reduces temperature gradually, attaining its maximum effect in from three to six hours, without producing much diaphoresis. The pulse-rate is also reduced with the temperature, and there is practically no depression. Of the one hundred and fifty instances of its use only two showed cyanosis or collapse. As an analgesic it relieves head-

ache and is very effectual in neuritis. In the malaise of acute febrile conditions and to produce sleep in simple insomnia it has been beneficial. The usual dose is about seven grains; the maximum amount which has been given in twenty-four hours is a drachm. Since it is sparingly soluble it should be administered in substance, or as tablets, wafers, or capsules.—*New York Medical Journal*, 1898, No. 1008, p. 425.

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**Dry Calcium Sulphohydrate as a Depilatory.**—Dr. Alembert W. Brayton states that calcium sulphohydrate can be made by heating a granulated mixture of plaster of Paris (calcium sulphate) with granulated wood-charcoal (to take off the oxygen). A high temperature is necessary, and it is best obtained by means of gas. A muffler is used—*i. e.*, set in cinders or bone-ash, and the mixture is heated to redness. By this method neither sulphuric acid nor iron sulphide is used. The dry, rose-colored or whitish product is applied to the skin in a wetted condition, or it may be put on dry and then wetted. Hydrogen sulphide is given off, which causes a rather foul smell. The substance is perfectly harmless to the skin, and may be left on any length of time, and does not even irritate abraded surfaces. It can be made cheaply.—*Journal of the American Medical Association*, 1898, No. 16, p. 921.

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**The Treatment of Latent Dyspepsia.**—M. Albert Robin states that if the stomach does not perform its work this failure can be completely supplied by the intestine. Reference is made to the total ablation of the stomach of a dog by Frémont. If the conclusion is reached that the stomach is not indispensable, it does not follow that latent dyspepsia is not without its inconveniences. If, however, the intestine fails, then the symptoms of dyspepsia appear and dominate the scene. To obtain a cure the constipation must be relieved, and for this these measures should be employed: (1) Purgatives, particularly drastic purgatives in small doses, for these are not followed by constipation as are the salines, which necessitates their continued use. (2) Gentle and methodical massage of the large intestine, and (3) the use of mineral waters, as Châtelguyon, Brides, Aulus, Kissingen, and Carlsbad. Albuminuria of dyspeptic origin is frequent, there also exists a dyspeptic diabetes, and these require treatment which is not usually considered in the discussions upon the therapy of these conditions.—*Le Progrès Médical*, 1898, No. 12, p. 182.

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**Infiltration Anæsthesia.**—Dr. Carl Ludwig Schleich, after recounting his experiments, states that the technical process is always the same: the formation, by means of the three solutions bearing his name, of an artificial œdema of the whole area within which an operation is to take place. The entire surface must be saturated in order that the operation may be completed without further injections. The needle is inserted its whole length horizontally so that it does not penetrate into the fatty tissues, and the contents of the syringe forced out by drops as the needle is gradually withdrawn. The subcutaneous tissues are next anæsthetized by expelling the fluid as the needle advances down to the limit which the operator is expected to reach. The strengths of the solutions are as follows: Cocaine hydrochlorate, 0.2

(strong), 0.1 (medium), 0.01 (weak); morphine, 0.025 (strong and medium), 0.005 (weak): sterilized sodium chloride, 0.2; distilled water to 100.0.—*Pediatrics*, 1898, No. 8, p. 335.

[Evidently the morphine has some effect in producing anæsthesia. Further than this the observations of Halsted, which showed that pure water, when injected hypodermatically, produced anæsthesia, have not been considered. —R. W. W.]

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**Eucaine-B.**—M. RECLUS sums up the advantages of this over other local anæsthetics as follows: (1) Its solutions can be heated even to boiling. This permits sterilization by heat. (2) Its solutions are stable and permanent, and (3) it is much less toxic (1 to 3.75) than cocaine. As for cocaine, the author employs a 1 per cent. solution, but with the precaution that the patient shall remain in a horizontal position for an hour or two after the operation, to avoid vertigo, tendency to syncope, pains in the stomach, and vomiting. This precaution is unnecessary when the former is employed, and, therefore, it is to be preferred when the patient is to walk immediately after the operation. If the field of operation is large or a considerable quantity of the anæsthetic is required, the safer should be chosen. — *Le Bulletin Médical*, 1898, No. 26, p. 300.

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**Treatment of Gonorrhœa.**—DR. BEHREND reports that of twelve instances of this disease in males (first attack), after one or two days the gonococci disappeared under the use of ½ to 1 per cent. solutions of protargol. Upon the clinical symptoms this remedy had no influence; the discharge continued. Better results were obtained by the use of other astringents, as the alum injection, although the latter does not destroy the gonococci. He treats the disease, while the followers of Neisser treat only the gonococci. The disadvantage of protargol lies in the fact that it acts only on the gonococci which it can reach; those which it cannot it leaves in peace, for it does not penetrate into the tissues.

This provoked a vigorous reply from Frank and Meissner, the former basing his argument upon five months' use of the remedy (133 patients), and quoting Fenger (110 patients), who had lauded the new remedy. —*Klinisch-therapeutische Wochenschrift*, 1898, No. 12, S. 414.

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**Yellow Palms as a Sign of Typhoid Fever.**—FILOPOWICZ (*Centralblatt für die med. Wiss.*, 1898, No. 11) calls attention [for the second time] to a symptom of typhoid fever not generally looked for. The palms and soles acquire a yellow color, which is more marked in proportion as the skin is thickened by toil, but present even when the skin is thin. This change comes on in the early days of the disease, and lasts until the end, disappearing in convalescence. The author thinks the sign due to the changes in the circulation, especially to anæmia of the skin, as the result of which the subcutaneous fat shows through.

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**Recent Improvements in the Treatment of Chronic Heart-diseases by Exercises and Carbonated Brine Baths.**—DR. THOMAS E. SATTERTHWAITE presents a valuable paper. He makes use of the resisted movements almost

exclusively, meaning that the patient makes regular voluntary movements, which are resisted by the physician or operator. These movements are fully illustrated by a series of thirty-seven plates. For the baths, which must be given in wooden or porcelain tubs, ordinary American sea-salt is preferred, because benefit is obtained from the iodides and bromides which it contains. To each pound of this, one and one-half ounces of calcium chloride are added. The carbon dioxide gas, which is added after two or three baths have been taken, is obtained from the action of sodium bisulphate, commonly known as the acid sulphate, upon sodium bicarbonate, such a quantity being employed that ¼ to 1 per cent. gas solution is obtained. The duration of the immersion is from four to twenty minutes, but no longer. The temperature should not exceed 95°, nor go below 85°; indeed, rarely below 90° F. At first the baths are given with an intermission every second day, then every third, later every fourth day, and still later every fifth day. The course of baths lasts from four to six weeks. After the bath the patient should be rubbed dry with towels, remain indoors, and rest for an hour at least.—*The Post-Graduate*, 1898, No. 6, p. 437.

[We recommend the perusal of this paper in its entirety. The author has given the essentials freed from the superfluous details, which have been added for various reasons, and has avoided the extravagances of the earlier writers.—R. W. W.]

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## MEDICINE.

UNDER THE CHARGE OF

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**The Length of the Incubation Stage in Typhoid Fever.**—E. JANCKEN (*Wiener klinische Wochenschrift*, 1898, No. 27) had an opportunity of making an important observation. Certain troops marching through two small villages in which were a number of cases of typhoid fever, drank copiously of water given by the villagers. That infection was acquired in this way follows from the absence of other exposure. Moreover, other troops passing through without pausing to drink remained free from infection. Of the thirty-six cases the symptoms appeared suddenly in all, with headache, chill, fever, severe diarrhœa, abdominal pain, and weakness. The course was mild, and defervescence occurred in the third week. The beginning of the disease was noted in three men on the second day (*i. e.*, two days after infection), in seven on the third day, in six on the fourth, four on the sixth, five on the seventh, in the other seven between the ninth and fourteenth days. This shows that under favorable conditions the typhoid bacilli can

produce symptoms within two days. In the cases observed the favorable conditions consisted in great fatigue, excessive thirst, and the ingestion of considerable quantities of the infected water. That the germs were not of unusually great virulence may be supposed from the mild form of the disease.

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**The Diazo-reaction.**—KROKIEWICZ (*Wiener klinische Wochenschrift*, 1898, No. 29) has made an extensive series of observations (more than sixteen thousand tests in eleven hundred cases) on this test, covering a great variety of diseases. Of many of the results it is not necessary to speak here. Suffice it to say that in most diseases examined the reaction was rarely or never present. An interesting result was that in kidney disease (except in the case of chrysarobin poisoning) the test was never employed. Even in cases of tuberculosis, with chronic nephritis or amyloid disease, the reaction was absent. In malaria the reaction was sometimes obtained in the acute febrile stage; in the chill it was always absent. The author found that the diazo-reaction occurring in pulmonary tuberculosis indicates a bad prognosis. The reaction is sometimes present before bacilli can be detected. Cases in which the reaction occurred with slight lesions ran a rapidly fatal course. Gangrene of the lungs in the course of tuberculosis seems to prevent the reaction. In tuberculosis of the mucous membranes, the lymph glands, the motor and genito-urinary tracts, the reaction is often absent altogether or in part of the course. In miliary tuberculosis the reaction is always present, but may become less intense just before death. In typhoid fever, even in abortive cases, the reaction is always present in the first and second stages. Later it becomes less intense or is absent. The reaction in this disease may be looked on as a symptom, and so long as it is present the disease cannot be considered as subsiding, even if the course at the time seems favorable. The reappearance of the test in convalescence almost always indicates a recidive. In cases of doubt between cancer of the stomach and intestinal tuberculosis the constant absence of the reaction points to cancer. The author made experiments with the toxins of tuberculosis, typhoid, erysipelas, and pus, with negative results, and is inclined to ascribe the reaction to unknown products of cell metabolism.

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**A Crural Venous Murmur.**—RICHARD GEIGEL (*Münchener med. Wochenschrift*, 1898, No. 27) notes an observation that has an important bearing on the double murmur (Duroziez's) heard over the femoral artery in aortic regurgitation. (Geigel also finds the double murmur not rarely in chlorosis, and as a rule with the *pulsus celer*). According to him, if the stethoscope is pressed about ten seconds hard enough to cause a systolic murmur over the femoral artery, and then the pressure suddenly released, a murmur can be heard, long or short, blowing or even musical. It sometimes lasts several seconds. On account of the duration he claims the murmur is venous; moreover, when short it is not synchronous with the arterial diastolic murmur still audible with light pressure. So a double arterial murmur may be supposed to be present if the facts here described are not known, since the method of bringing out Duroziez's sign is similar to that mentioned. Geigel, whose studies of physical signs are always noteworthy, explains the murmur in the vein as follows: The pressure of the stethoscope on the

vessels hinders the flow of blood out of the crural vein and rasies its pressure. When the pressure is relieved the blood flows with increased rapidity into the iliac vein. If the crural vein is still partly compressed a stenotic murmur will be produced, and this lasts until the pressure is equalized. The murmur will also be assisted by low pressure in the iliac vein, resulting from the partial obstruction of the crural.

The murmur described occurs in many individuals, sick and well, its inconstancy being, perhaps, due to variations in the position of the vein.

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**Two Rare Cases of Auto-intoxication.**—G. ROSENFELD (*Centralblatt für inner Med.*, 1898, No. 29) reports two cases of diagnostic importance. A woman, aged thirty-two years, had vomited everything swallowed for thirteen days, and during that time had only two stools. At the end of this time she was partly stuporous, the lips fuliginous, tongue dry and fissured. Loud commands were followed by rolling of the eyes. The pupils were contracted, but the reaction was preserved. There was continued frontal headache; no fever. Examination of the body was negative; the spleen was not enlarged. There was the odor of aceton on the breath; the urine, reduced slightly, contained much aceton and diacetic acid; no albumin; diazo-reaction negative. The next day the aceton reaction was just as strong as before; the polariscope showed a deviation to the right of less than one degree; the phenylhydracin test gave a copious sediment of osazon. The mind was clearer. Recovery gradually followed.

A man, aged twenty-six years, had anorexia and vomiting for two weeks. At the examination he vomited a test-breakfast after forty minutes, the vomitus containing no free HCl. The urine, reduced slightly, contained much aceton, diacetic acid, and osazon; no albumin. After four days the aceton disappeared, but the osazon, which resembled galactosazon, continued. After a test-breakfast HCl was present in excess. One hundred grammes of glucose were taken without causing an increase in the reducing power of the urine. The patient recovered, though with hydrochloric acid still in excess in the gastric juice. Neither patient had diabetes, and the attacks can hardly be looked on as other than intestinal auto-intoxications. The author leaves undecided the question whether the aceton was the toxic agent or only the associate of an unknown intestinal toxin. The treatment consisted in feeding by cream (one liter a day) and ice-cream.

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**The Bacterial Complications of Diabetes.**—HONL (*Wiener klin. Rundschau*, 1898, No. 16) shows that diabetics are so prone to bacterial invasions because: The glucose has a favorable effect on bacterial growth; the sugar lowers the resistance of the tissues; the diabetic cachexia and the lessened alkalinity of the blood assist. As the result of examinations in twenty-nine cases he found that the most frequent complication was tuberculosis (41 per cent.). Diabetic tuberculosis appears in various forms, one of which is remarkable for the rapid destruction of lung tissue and the sparse appearance of specific bacilli, and is due to bacterial symbiosis. From the tuberculous cavities septic or pyæmic processes may arise, some of which are due to bacteria rare in human pathology. A case of pneumo-bacillary septico-pyæmia is detailed, being the fourth so far reported.

**The Left Ventricle in Mitral Disease.**—OESTREICH (*Archiv für path. Anat.*, Band cli., p. 189) has made some observations that help to clear up the opposing views of Lenhartz and Baumbach, who denied that mitral stenosis caused atrophy of the left ventricle, and Dunbar, who tried to show that the old view was correct. Oestreich finds that Dunbar and the older authors were wrong. The error probably arose through the hypertrophy of the right ventricle, in comparison with which the normal left ventricle seemed atrophied. Atrophy does not really occur, and a sufficient filling of the ventricle seems probable by reason of the increase of pressure and rapidity of the blood-flow. In mitral insufficiency the author found that hypertrophy was not always present, but when so is due to local anatomical changes, especially those causing retraction, increasing the work of the ventricle.

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**Papillary Myxoma of the Tricuspid Valve.**—GUTH (*Prager med. Wochenschrift*, 1898, No. 8) reports a case of this kind in the body of a patient with medullary cancer of the stomach, perforation of the stomach and diaphragm, and septic pleurisy. The tumor was on the auricular side of the posterior flap of the tricuspid valve, about the size of a bean; villous; grayish red. The tissue was myxomatous, growing from the connective tissue of the flap and covered with endothelium. The author thinks it had no relation with endocarditis. Altogether, sixteen cases of myxoma of the heart have been described, three of them being papillary.

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**Dulness Over the Apices of the Lungs, without Pathological Changes.**—KERNIG (*Zeitschrift für klin. Med.*, Bd. xxxiv. p. 322) calls attention to this condition, which is not clearly enough described in text-books. The cases are not frequent. They affect weak, cachectic, bed-ridden patients. The dulness is found in the supra- and infraclavicular and suprascapular regions. It is usually as marked as in cases of retraction or tuberculous infiltration. The breathing in the affected areas is usually more or less weak; at all events there are no râles and no bronchial breathing. On account of the almost constant emaciation and weakness of the patients, inspection, palpation, and the changes in respiration are comparatively useless. This phenomenon the author ascribes to a retraction of the lung tissue, caused by imperfect inspiration, but a senile atrophy is perhaps often present, as in one case under his observation.

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**Pericarditic Pseudo-cirrhosis of the Liver.**—Although the accuracy of the clinical picture of this disease given by PICK (see THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, August, 1896) has been confirmed by various observers, the explanation of the ascites, given by him, has been denied by some. So Heidmann thinks the ascites is due to peritonitis, although the probability of this view was early denied by Pick. NACHOD (*Prager med. Wochenschrift*, 1898, No. 26) was able to throw an important light on the question by reason of a laparotomy made on a patient in the early stage of the disease. The symptoms began with pain and swelling in the joints, following cold. Later, dyspnœa, palpitation, headache, and dizziness appeared. Œdema of the feet was followed by ascites, and the

œdema then subsided. The heart was enlarged in all directions, the apex beat feeble, the first sound at the apex impure, the second sound at the base double, the second pulmonary accentuated. The liver was enlarged; there was ascites; the splenic dulness enlarged. No albuminuria. An exact diagnosis was not made; the heart was looked on as the organ first affected. After two months the ascites had increased so much that some operative treatment was necessary, and laparotomy was performed. An incision was made from umbilicus to symphysis. The peritoneum was perfectly healthy; there were no adhesions. Five litres of yellow fluid were evacuated. The liver was enlarged, extending a hand's-breadth beyond the ribs; the edge was thickened, smooth, hard, and cyanotic. The spleen felt normal. Improvement was only temporary Puncture was necessary five times, and nine months after operation the patient died. Autopsy showed tuberculosis of the serous membranes; fibrinous pericarditis, with extensive adhesions; cardiac cirrhosis of the liver. Had it not been for the laparotomy it might have been thought the case was one of serous membrane tuberculosis from the beginning, and, in fact, the description of the alterations is not sufficiently clear to enable the reader to exclude a tuberculous origin for the whole case. The author, however, holds a different opinion, although he admits the impossibility of explaining why it is that pericardial adhesions are followed in some cases by the changes found. Still, as Pick pointed out, other diseases of the heart show a great irregularity in the associated changes.

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## SURGERY.

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UNDER THE CHARGE OF

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**Surgical Intervention in Hæmatemesis Consecutive to Exulceration of the Stomach.**—DIEULAFOY (*La Press Méd.*, January 19, 1898) summarizes his views on this subject as follows :

1. Outside of the simple ulcer, which is a frequent cause of hæmatemesis there is found a superficial loss of substance of quite large extent, which the author proposes to term simple exulceration.

2. This form of ulceration the author believes is capable of producing a more terrible form of hemorrhage than that generally seen in the case of simple ulcers.

3. The loss of substance in simple exulceration does not go deeper than

the mucous layer; it takes in the muscularis mucosæ, however. The great and frequently deadly hemorrhage which results arises from the ulceration of one of the arteries which ramify in the muscularis mucosæ.

4. Clinically, the simple exulceration has the symptomatology of the simple ulcer as described by Cruveilhier, of which it no doubt is the initial stage; but more frequently it commences quietly and at the same time in a latent manner with moderately severe hemorrhages.

5. Surgical intervention is the preferable treatment for hemorrhages consecutive to simple exulceration. The abundance rather than the repetition of the hemorrhage is the indication for intervention.

6. The operator should never forget that the stomach may present an apparently sound appearance and yet be the seat in some part of a simple exulceration. It is therefore essential carefully to examine the entire stomach, if necessary, with a lens, to detect the exulceration, which is frequently accompanied by ecchymotic areas which are points of repair.

7. Suture of the area involved with a small margin of sound tissue usually suffices in these cases. The operative results are generally more successful in this form of ulceration than in the case of simple ulcers, as the limitation of the lesion favors the surgical method of treatment.

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**A New Typical Form of Acute Intestinal Obstruction.**—An interesting series of five cases of intestinal obstruction are reported by HOCHENEGG (*Wiener klin. Wochenschrift*, December 23, 1897) which demonstrate a new typical form of intestinal obstruction which he has named "combination-sileus."

In all the cases it was noted that a stenosis of the colon had existed for some time, producing an hypertrophy of the walls of the gut. Besides this lesion, all the patients suffered from an acute intercurrent obstruction of the small intestine, either by bands, contracting scar-tissue, or herniæ, the acute activity of which was produced by the drawing back of the intestinal contents, in the first place, by the obstruction in the large intestine. The intestine is distended between these points of stenosis and above them, and is marked by increased peristalsis. If the operation is undertaken at this stage only the obstruction in the colon would be detected.

The chronic condition present in the colon would cause an hypertrophy of its walls, and there would be greater force in its peristalsis, which would be more effectual than that of the small intestine, and in consequence the retrograde peristalsis from the colon would finally force all its contents above the seat of stricture in the small intestine.

An operation undertaken at this time would undoubtedly remove only the obstruction in the small intestine, while the primary cause of the trouble would go undetected. This occurred in all the author's cases. At first there was apparent improvement, the patient gaining for a few days, when suddenly the symptoms of obstruction returned, with all their former severity, the subsequent operation alone demonstrating the true condition. Since the former operation and the patient's subsequent condition have so altered the force of the peristaltic movements in the colon that they are scarcely visible, the condition is difficult to differentiate from peritonitis.

Such a condition is a very serious one for an operator to face who believes

that he has already removed all cause of obstruction, and it has probably frequently happened that patients have died because the possibility of such a complication was not thought of. The long interval between the relapses which some of the cases showed was possibly due to a temporary subsidence of the œdema present at the primary point of obstruction, caused by the rest and treatment of the secondary lesion. The occurrence of five cases in fifty-two operations performed by the author for intestinal obstruction shows that the condition is not so rare as might be supposed.

The diagnosis is materially assisted by considering the patient's statements as to where he first experienced pain and what the locality was in which the obstruction seemed to him to be situated. More certain is the observation in the early stages of peristaltic movements in the distended colon and the subsequent change in the location of the symptoms. The change is generally one from a condition in which therapeutic measures might be considered to one in which only immediate operative interference can be considered.

The symptom at the time of operation which will lead to the detection of such a condition, when it is suspected, is the contrast between the two portions of the colon. Above it is hypertrophied from the continued action required in overcoming the chronic condition prior to the complete obstruction, while below in the descending colon the intestinal wall is of normal thickness.

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**The Operation of Gastro-enterostomy Conjoined with Entero-anastomosis.**—In discussing the present status of this operation, WEIR (*Medical Record*, April 16, 1898) summarizes his views on the subject in the following conclusions:

1. That gastro-enterostomy, as usually performed, is yet an unsatisfactory operation.

2. That its principal relievable danger is from bile or stomach retention due to operative defects, either primary or secondary—*e. g.*, spurs, kinks, twisted or distorted openings, and possibly stomach atony.

3. That a posterior stomach opening favors gravity action by the evacuation of the organ, particularly if it is atonied, and diminishes the risk of pressure or of pulling on the attached intestine.

4. That the operation is best conducted by means of the Murphy-button.

5. That a gastro-enterostomy, associated with an entero-anastomosis in the afferent and efferent portions of the jejunum, probably gives the best assurance against obstruction. Experience in this method, while so far gratifying, should, however, be enlarged to ascertain if the increased risk of the additional button overtops the danger of the bile and pancreatic obstruction.

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**A Simple Method for Controlling Hemorrhage During Disarticulation at the Hip.**—THOMAS (*Lancet*, April 23, 1898) details a simple method for controlling hemorrhage from the femoral artery which he used with satisfaction in an amputation at the hip.

The common femoral artery and vein were temporarily compressed immediately below Poupart's ligament. At this point the artery is quite super-

ficial and easily felt, and is well above the origin of the deep femoral. The femoral pulse being felt, he made a stab-puncture in the skin, one about an inch outside the pulse, and the other about two inches to its inner side—*i. e.*, immediately below the pubic spine. An aneurism needle was pushed from one stab-puncture well behind the artery and vein to the other stab-puncture, and two long, thick, silk ligatures were carried back when it was withdrawn. A roll of compressible material was placed over the artery and the two ligatures tied separately over it, after the limb had been elevated for a sufficient length of time to empty it of blood. The knots are not firmly fastened at first, a surgeon's knot is used, held by hæmostats, so that they can be readily made tighter if it is found necessary.

The same result can be attained by making one puncture and pushing one blade of a Doyen's broad ligament forceps beneath the vessels, and then clamping them, but this requires an extra instrument and is not available in an emergency.

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**The Abdominal Incision Through the Sheath of the Rectus Muscle, with the Displacement of its Lateral or Median Margin.**—LENNANDER (*Centralblatt für Chirurgie*, 1898, No. 4) has used this incision in many cases of appendicitis, and believes it is preferable except where firm adhesions hold the appendix in the lumbar region or in the lateral portion of the iliac fossa and where drainage is necessary. It is especially useful in operations during the interval, where the exact position of the appendix can usually be determined beforehand. In all cases where the cæcum and appendix are freely movable this incision gives better results and allows in women the thorough exploration of the adnexa, which are also frequently involved.

The direct incision through the rectus muscle has the disadvantages of cutting the vasa epigastrica inferiora, of generally cutting the muscular branches of the nerves and producing atrophy, and in addition the scars of the incision directly through the different layers of the abdomen are in close relation to each other.

The method the author advocates is through the skin, then through the anterior fibres of the sheath of the rectus one-half to three-quarters of an inch from the external margin of the muscle and toward the median line.

On the right side, if for appendicitis. The wound is thoroughly dried, the border of the rectus carefully freed and gently displaced inward. One or two nerves accompanied by vessels are seen now crossing the field diagonally to the muscle. The vessels are tied and cut. In almost all operations the nerves can be displaced to the upper or lower angle of the wound and remain unharmed throughout the operation. The posterior layer of the rectus sheath is now incised, and with it the peritoneum opposite the skin incision.

The wound is afterward closed by layers of sutures separate from the peritoneum and posterior layer of the sheath; the muscle is then replaced, its margin attached by sutures, the anterior layer of the sheath sutured separately. The skin is closed with deep and superficial sutures of silkworm-gut, the deep sutures including the sheath of the rectus. Drainage or even packing may be employed in the area anterior to the rectus sheath, if deemed necessary.

The advantages of this method are the great extent of the scar or wound surface, the possibility in simple operations of avoiding the nerves, presence between the two incisions in the rectus sheath of a living muscle that is entirely intact, and that the incision is made through an area well supplied by bloodvessels, which is not the case in incisions in the linea alba or semilunaris.

The same method may be applied to all abdominal incisions in the median line by making the incision through the sheath just outside the median border of the rectus muscle.

After a large number of operations by this method, the author is perfectly satisfied with his results, and has seen no tendency to hernia.

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**The Anatomy and Treatment of Flat-foot.**—Long, narrow feet are, according to CLARKE (*Lancet*, April 23, 1898), the most likely to become flattened from pressure on the highest part of the arches, so that in extreme cases the whole of the inner border of the foot rests upon the ground.

The treatment adopted by the author consists in wearing boots properly shaped—*i. e.*, having soles that are sufficiently wide anteriorly for the toes. They are furnished with pads of vulcanized rubber, so formed that the highest part falls in front of the transverse tarsal joints. In addition, an outside leg-iron, jointed at the ankle and supported by an inside T-strap, is applied in some cases. Manual wrenchings and douchings are also helpful, and as soon as sufficient improvement has been obtained suitable exercises may be begun. These exercises are useful, and in suitable cases may alone suffice. (1) Rising on tip-toe a definite number of times, the toes being inclined inward. (2) Adduction of the foot, repeated several times. (3) Walking for a short time daily on the outer border of the foot.

Another form of flat-foot that often demands complete rest for a time is that observed in active rickets. Every case requires its own management of complications, of which hallux valgus and hammer-toe are the commonest. To correct these deformities the author employs a metal sole of proper shape, with a toe-post to hold the great toe in position and slots for the insertion of a soft bandage which holds the other toes in their proper position.

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**Tibio-tarsal Disarticulation with a Flap Containing the Periosteum of the Calcaneum.**—The results obtained from this method of amputation, which were first described by Ollier, have lately been studied by LA BOMEARDIÈRE (*Revue de Chirurgie*, September, 1897) by means of skiagraphs which show that there results a reproduction of bone from the periosteal flap of the calcaneum which varies in its opacity to the Röntgen ray in proportion to the length of time it has been formed. In all its states it, however, formed a firm support for the weight of the body, the amount of new bone depending to a great extent upon the age of the calcaneum removed. The cicatrix is entirely anterior, and is not subject to pressure.

The functional result is excellent, shortening is reduced to a minimum, walking is easy, and the deformity produced is readily hidden by an appropriate apparatus.

There are many marks of superiority over other older methods; there is less traumatism; there is absolute security from an operative stand-point

for the preservation of the posterior tibial artery and its branches. The point of pressure is over that part of the foot which normally supports the greatest pressure. It unites all the advantages of Pirogoff's amputation without the disadvantages which are met in tubercular disease of the bones.

It is preferable to other operations in all cases of tubercular disease of the tarsus, especially the posterior portion. It is only contraindicated by malignant disease of the bones. In cases of traumatic injury Pirogoff's amputation should be employed, or some of its modifications, with the idea of saving all that is possible. This is true where the tubercular lesion is diffuse and recurrence is to be expected, where less radical measures are pursued, or where a rapid healing with a useful limb is the object desired.

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**The Surgical Treatment of Local Manifestations of Filarial Disease.**—CRAWFORD (*Indian Medical Gazette*, April, 1898) illustrates an article on this subject by the report of two interesting cases of filarial disease which show the beneficial effect of surgical interference in these cases. The question of operation resolves itself into the treatment of the different local troubles and inconveniences arising from the blocking of the lymphatic system in different parts of the body. Many of these local lesions are subjected to operation with very decided success, so much so that there is neither doubt nor hesitation on the surgeon's part, provided the general condition is satisfactory—the ordinary limitations, in fact, attending all surgical procedures undertaken where life itself is not in the balance. The presence of parasites in other parts of the body is no contraindication to operation.

The dilatations in the lymphatics usually occur in the neighborhood of glands, and on careful dissection enlarged lymph-vessels may be seen passing into and out of them. The groin is commonly affected, both femoral and inguinal regions participating in the trouble, and frequently on both sides. It is probable that there is in some cases other deeper lymphatic involvement. The removal of glands might seem but a temporary relief, but the results obtained prove its value beyond doubt.

The wounds caused by complete removal of filarial glandular enlargements and lymphangiectasis have been considered always as in no way differing from ordinary surgical wounds. Careful dissection is required, but the area involved is usually small, and ordinary surgical rules have always been applied successfully.

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**Amputation of the Head of the Femur as a Substitute for Exarticulation.**—FRANKE (*Centralblatt für Chirurgie*, November 13, 1897) advocates the resection of the neck of the femur, leaving the head *in situ*, as a method of saving much time in amputations of the hip-joint, both in the performance of the operation and in the subsequent healing.

The section of the neck of the femur with a chisel is much more rapidly performed than disarticulation, with the cutting of the ligaments, of the posterior portion of the joint capsule, and the removal of the head of the bone from the acetabulum. The method is not advocated for cases in which the amputation is done for malignant disease, where the leaving of the head might be followed by secondary development of the disease. The author

does, however, claim that it materially shortens the operation, and that healing is more rapidly effected where the acetabulum is filled by the living head of the femur, its nourishment being maintained by arteries found in the ligament and capsule.

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**The Treatment of Chronic Empyema.**—The conclusions arrived at by CURTIS (*Medical Record*, March 19, 1898) are emphasized by him as follows:

We must not allow ourselves to be alarmed at the apparent severity of the operation advised, for the records show that even these weak patients bear very well the complete resection of the ribs, if it is rapidly and skilfully done. The secret of success lies in the slight anæsthesia required and in the proper control of hemorrhage.

Nor should the fear of deformity prevent these operations, for the deformity greatly diminishes with time in both adults and children.

Finally, when we consider the incurable and dangerous condition for which the operations are required, we are willing to assert that the immediate risk to life arising from the operation is justified, and that even a permanent deformity is not too great a price to pay for a cure in these desperate cases.

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**Inguino-scrotal and Intra-abdominal Lymphangioma; Lymphatic Varicocele, with Hydrocele Containing Filaria; Testicular Elephantiasis.**—The study of an interesting series of six rare cases of lymphatic disease of the testicle, scrotum, and inguinal region leads LE DENTU (*Rev. de Chir.*, January 10, 1898) to classify these conditions as follows:

In the series of cases there were the acute, subacute, and frankly chronic varieties. The acute cases are marked by rapid invasion and intense pain, the pain being less intense when the onset is less rapid, swelling of the epididymis and frequently of the testicle itself, thickening in the tunica vaginalis, redness of the integuments in certain cases, irradiation in frequent crises of the pain along the inguinal canal, the line of the ureter (the nephritic form of Audain), vomiting more or less frequent, a fever habitually intense, remittent, and lasting three, four, or five days; this is the symptomatology of the disease variously termed special orchitis of warm climates, malarial orchitis or filarian orchitis. These crises are frequent after their first appearance, but frequently become less acute.

In contrast to the clearly acute cases there have been sometimes observed a swelling of the testicle practically without exacerbations, but with a continuous pain. This condition of subacute, constant pain may, on the other hand, succeed formerly acute crises.

The third group are marked by the chronicity of the lesion from the onset, by the absence of pain, by the coexistence in some cases of involvement of the testicle with elephantiasis of the scrotum. It is in this category that those cases belong which the author has demonstrated are true elephantiasis of the testicle and epididymis, and in which lesions are found that coincide exactly with those of cutaneous elephantiasis. This testicular elephantiasis is preceded by attacks of acute lymphangitis or by chronic lymphangitis commencing on the surface, or in the thickness of the tunica vaginalis, or the tunica albuginea, in the epididymis or in the deferent canal itself.

In one of the cases operated upon by the author a lymphangioma was

found occupying the inguino-scrotal region and extending into the abdomen externally to the peritoneum, while there was present at the same time an incomplete inguinal hernia and a lymphatic varicocele; the latter was entirely separate from the lymphangioma and had no connection with it.

The cause of these lymphatic growths does not appear to be clear. Histologically they are alike, and yet in some the filaria sanguinis is found, as in one instance where it was seen of large size in the fluid of a hydrocele. Although it has been proven to be a cause of elephantiasis, and was found in the author's case of elephantiasis of the scrotum and testicle, the filaria is not always found in connection with these lymphangiomata.

There are two theories which seem tenable, the one attributing them to filarial infection independently of al climatic element; the other, in which climatic influences prepare the lymphatics for the subsequent growth and development of the filaria. The *elephantiasis nostras* proves that the filaria are not indispensable to the development of lymphatic disease. There are therefore other causes than the filaria capable of producing lymphatic engorgement and disorders of this system, and it is probable that the cause is complex in its nature, and that, for the present, further developments must be awaited before their etiology can be definitely settled.

The treatment of this condition is preferably a change of climate, which generally effects the death of the parent filaria and of the successive stages of the embryo.

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**The Employment of the Murphy-button in Place of Sutures in the Intestines.**—FRANK (*Wien. klin. Woch.*, 1897, No. 39) has employed the Murphy-button with success in seven cases, including gastro-enterostomy, resection of the small intestine and of the cæcum, and in entero-anastomosis.

The results in all these operations were entirely satisfactory. The author praises the exact coaptation produced by the button, and believes it is better even than that produced by stitches, especially in the union of intestines of different calibre or in which the walls are of varying thickness. He has seen no difficulty arise from the smallness of the lumen in the button, and believes that the fecal fistula that followed in one instance was due to the excessive stretching of the intestine and not to the button, and that it would have followed suture. In one case, where entero-anastomosis was employed after a gangrenous hernia, he found that the opening into the abdomen had to be enlarged to permit the return of the intestine containing the button.

The great rapidity with which the button can be employed makes its use in cases requiring rapid operation essential, and the author is of the opinion that its use is indicated as clearly in all other operations, and that, until something better is found to take its place, it will gradually grow in deserved favor, the objections raised to it being shown to be without true foundation.

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**The Surgical Treatment of the Movable Liver.**—TERRIER and AUVRAY (*Rev. de Chir.*, September 10, 1897), in summarizing the results of their exhaustive study of this subject, say that in the eleven cases in which it has been employed there have been eight successes, one death, and two cases in which the results of the operation are as yet uncertain.

The death was due to acute peritonitis, making it impossible to draw any

conclusion regarding the therapeutic value of the operative interference. In the eight cases the immediate and late results were so satisfactory that they are virtually cures. In all of these cases it was not possible to completely reduce the liver to an absolutely normal position, but in each it was fixed in as nearly the normal position as possible. From this fact the author concludes that the fixation produces more beneficial results than the reposition, and that, in fact, the resulting benefit is due to the fixation.

In one of the two cases in which no benefit resulted a subsequent nephropexy relieved all the symptoms, showing that the trouble had been entirely there and not with the liver.

In regard to the method of operating, the author says that the fixation of the liver is possible without great difficulty; it is a perfetly logical operation, and should be employed where certain definite indications are present, and is entirely justified by the results which have been obtained.

This operation should not be employed in the early stages of the disease where it is possible to secure a recovery by judicious internal treatment directed to the condition of the nutrition of the parts, together with the employment of a carefully-applied bandage. It should be employed in the later stages, when the draggings and compressions, which accompany the condition and produce the pain and disability of the patient, are so marked as to make recovery impossible without surgical interference.

The fixation should be accompanied by operation upon the abdominal wall, correcting the relaxed condition which predisposes to hepatoptosis.

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## OTOLOGY.

UNDER THE CHARGE OF

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**Congenital Malformation of the Auricle.**—Operations for the cosmetic improvement of congenital malformations of the auricle do not seem to be attended with encouraging results, judging from a case, with illustrations, reported by H. HECHT.—*Archiv f. Ohrenheilk.*, February 24, 1898.

**Faucial, Nasal, and Aural Diphtheria.**—A case of faucial, nasal, and aural diphtheria in a child, aged three years, is reported by C. H. BURNETT (*Philadelphia Polyclinic*, May 21, 1898), in which auto-reinfection of the fauces took place from the ear, which continued to run after the first attack of faucial diphtheria, and in which the diphtheria bacilli were found after recovery from the second faucial attack. The ear lost all symptoms of disease under the instillation of formalin solution (1 : 1000).

**Pneumo-massage of the Ear in Chronic Aural Catarrh.**—Pneumo-massage possesses great advantages over all forms of inflation in the treatment of chronic catarrhal deafness, as shown by A. POLITZER (*Ann. des Mal. de l'Oreille*, April, 1898), and by E. FRIEDLAENDER (*Berlin. klin. Wochenschrift*,

March 21, 1898). The latter maintains that it arrests the progress of the disease. Politzer employs by preference the graduated masseur of Delstanche, while Friedlaender prefers the "vibro-masseur" of Wegener.

[The simpler the apparatus for pneumo-massage the better. We have found the simple pneumatic speculum of Siegle amply sufficient for efficient pneumo-massage of the ear.—ED.]

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**Total Excision of the Membrana Tympani in Chronic Aural Catarrh.**—*Total excision* of the membrana tympani and ossicula, including the stapes, is of no value in either improvement of hearing or arrest of progressive deafness, as may be learned from articles by E. J. MOURE (*Archiv f. Ohrenh.*, April 26, 1898), E. S. CLARK (*Pacific Medical Journal*, July, 1897), and others.

[The suggestion to perform this operation or any operation on the drum cavity in chronic catarrhal deafness, via the mastoid, is not only irrational, but, in our opinion, is an interference full of risk of injury to the patient. —ED.]

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**Acute Otitis Media, Especially in Children.**—In this disease the diagnosis is of prime importance, as shown in an article by W. CHEATHAM (*Pediatrics*, March 15, 1898). If pus is present in an acute case it must be evacuated promptly, or the child's life is in danger.

After the discharge is established, the less treatment the ear receives the better. Inflations should never be employed, as they force septic matter from the nose into the ear, or from the ear into the mastoid, as shown by B. T. MOUSER (*Pacific Medical Journal*, August, 1897). [The removal of the matter from the middle ear is impossible if the perforation in the membrana is small; if the perforation is large, the matter flows freely from the drum cavity into the auditory canal, the natural drainage-tube of the middle ear in time of suppuration. At such a time, whether the perforation is large or small, everything dropped or syringed into the ear tends to stem and impede this natural and beneficial outflow and bring about secondary infection of the middle ear and mastoid antrum. I have never yet seen a case of acute mastoiditis consecutive to acute otitis media that was not the artificial result of medication applied, often by the patient or his friends, sometimes by his physician, to the primary otitis after the membrana had ruptured and dis charge had set in. This discharge is beneficent, as it carries off pathogenic germs, and is no more to be checked than the resolution of a pneumonia is to be stayed. We favor expectoration in the latter case; we do not syringe and swab and medicate the mouth, pharynx, nor trachea. We should favor the aural discharge by not impeding or risking the impediment to its escape by the auditory canal. Hence, the safest plan is to apply nothing, either wet or dry, to the auditory canal when the discharge sets in from the acutely inflamed middle ear.

The pus in such cases is something like a foreign body; it will not reach the brain, unless pushed there by artificial means, too often called medical treatment. The proper time to syringe the acutely inflamed ear is before rupture or paracentesis of the membrana, so that when discharge does set in it escapes into an aseptic canal, free from staphylococci, the chief elements in the induction of secondary infection and chronicity.

Acute inflammations of the middle ear having been diagnosed, dry heat should be applied over the ear. This often brings about resolution. All forms of instillations should be avoided. They are rarely endured by the inflamed ear, and they may excite further inflammation. If pain increases under dry heat, and spontaneous rupture is delayed for six or eight hours, then there is only one thing to do, viz., incise the drum membrane at its most inflamed and protuberant point. This may be done under general anæsthesia, especially in a child, if its general condition permits. But if the surgeon knows how to do it, it is not a painful operation. Scraping the auditory canal in performing paracentesis is more painful than paracentesis itself, as the membrana is not as sensitive as the skin of the auditory canal. The discharge may not flow copiously for an hour after paracentesis, especially if the latter has been delayed until inspissation of secretion has occurred. After paracentesis or spontaneous rupture and the occurrence of discharge from the ear, let the ear alone, so that it may drain itself. Matter as it appears at the meatus may be gently mopped, not swabbed, away with absorbent cotton or sterilized gauze. Swabbing irritates the canal and causes furuncles. Syringing is rarely, if ever, demanded, and peroxide of hydrogen *never*.

If these latter applications are made to the acutely inflamed ear, mastoiditis usually results, and hence the large and increasing numbers of reported cases of acute mastoiditis secondary to acute otitis. If syringing and the use of peroxide of hydrogen are avoided, especially the latter, there will be no mastoiditis consecutive to acute otitis media. The former lesion is purely artificial and unnecessary, according to my experience.—ED.]

The pernicious results of the poultice-treatment and use of Politzer inflation in acute otitis media, resulting in secondary infection of the mastoid and production of mastoiditis, are well demonstrated by two cases reported by J. H. BRYAN (*Journal American Medical Association*, March 5, 1898). In one of these cases gravitation of pus from the mastoid into the neck had begun. Both cases finally recovered after mastoid trepanation by chiselling.

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**Indications for Trepanation of the Mastoid Process.**—The indications for opening the mastoid when diseased in consequence of chronic purulent otitis media are comparatively easy; the indications for opening the mastoid when it is diseased in consequence of acute otitis media are, as a rule, extremely difficult. E. RIMINI (*Berlin. klin. Woch.*, March 14, 1898) assumes that in every case of acute otitis media there is a simultaneous purulent infiltration of at least the aditus and the antrum, if not of all the mastoid cells, as has already been pointed out by Politzer and others, and accepted by all aurists of experience. Consequently, in all cases of acute otitis media there is tenderness of the mastoid on pressure, without any other external symptoms in the cortex. But this fact alone does not warrant opening the antrum in every case of acute otitis media, for we all know that under cautious, conservative antiseptic and aseptic treatment the vast majority of acute otitides recover entirely without mastoid interference.

The course, however, of acute purulent otitis media is not always so favorable; sometimes, especially if the treatment of the primary acute disease has been defective, the pains in the mastoid increase and are felt not only

on pressure, but occur spontaneously. "Inflammatory œdema of the mastoid ensues, the auricle is pushed forward, and to these objective symptoms there are added headache, elevation of temperature, and in some cases chills. This is a group of symptoms demanding immediate surgical interference, for it shows that an abscess has formed in the mastoid. Since such abscesses tend to spread, the proximity of mastoid empyema to the brain is a menace to the entire organism." (Rimini.)

We may deduce that, as a rule, empyema of the mastoid cells arises from empyema of the antrum, which is really part of the drum cavity. From that point sometimes the empyema extends downward and backward to the mastoid cells. It must be borne in mind that periostitis of the mastoid process consequent to an otitis externa that often accompanies an acute purulent otitis media can also produce inflammatory œdema of the skin of the mastoid and projection of the auricle, often accompanied, also, by headache and fever, and thus give rise to the suspicion of the presence of an empyema in the mastoid. But the rapid disappearance of these symptoms upon antiphlogistic treatment of the external ear and skin of the mastoid lead to a differential diagnosis. Unfortunately, however, a mastoid abscess does not always occur with such marked and characteristic symptoms, but runs a "latent" course with uncertain symptoms. We are then obliged, as Rimini shows, to depend for the diagnosis of mastoid empyema upon other symptoms, such as continuance and increase of the discharge beyond four or five weeks, when there is no dyscrasia present to account for it, comparatively insensitive prolapse of the posterior superior wall of the auditory canal near the membrana, and sometimes headache, though the latter is likely to be absent if the drainage from the mastoid through the antrum and middle ear into the auditory canal is good. In the latter instance, however, instead of headache, there will be a sense of fulness in the head, this latter symptom alternating with attacks of headache of more or less severity. In other words, if mastoid disease in connection with either acute or chronic purulent otitis media is attended with well-marked objective or subjective symptoms, especially the former, the diagnosis is easy. If antro-mastoid disease is not thus attended with well-marked objective symptoms, but is of the so-called "latent" variety, it may puzzle the most expert diagnostician of ear diseases. Whether or not we are justified in an exploratory operation in all doubtful cases, both acute and chronic, remains to be seen.

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**Otic Cerebral Abscesses.**—F. MARSH (*British Medical Journal*, April 30, 1898) reports five cases of cerebral abscess from chronic purulent otitis media. Three were uncomplicated abscesses in the temporo-sphenoidal lobe, and diagnosticated as such for the following reasons: 1. A long history in each case of the chronic purulent ear disease, twenty-five, fourteen, and nine years respectively. 2. No mastoid tenderness excepting in one case, and no tenderness on percussion over the sigmoid sinus. 3. No thrombosis of the internal jugular vein. 4. No high or greatly varying temperatures, and pulse not rapid. 5. Absence of pyæmic symptoms, in the main. 6. Cerebration little affected in the early stages, but becoming slow later. 7. Marked emaciation. 8. A chronic course terminating in coma. The abscess in these cases was deemed temporo-sphenoidal rather than cerebellar, because

there was no occipital headache, no marked vomiting, nor disturbance of equilibrium, no sensory aphasia, and no implication of the sixth nerve. In these cases the fifth nerve was early involved, and a dental surgeon was called upon in one case to "eliminate a possible dental cause for the pain." These three cases were relieved by operation on the mastoid and cranium.

The same author reports (*loc. cit.*) multiple brain abscesses in the white substance from chronic otitic purulency, secondary to septic thrombosis of the lateral sinus, in a case of a boy of nineteen. Operation failed to relieve the patient.

Marsh also shows that temporo-sphenoidal abscess from chronic purulent otitis media may be complicated by septic basal meningitis, as in the case of a boy, aged nine years. In this case there was also a mastoid abscess. Operation upon the mastoid and cranium was not followed by relief.

Marsh (*loc. cit.*) draws attention to the fact that "commencing coma still seems to be the signal for surgical action, and that this is not too late is shown by the complete and rapid recovery " in several of his cases, and similar ones elsewhere." His experience leads him to hope, however, " that an exploratory operation might with advantage be undertaken without waiting for coma in all cases presenting symptoms" strongly indicative of the presence of pus in the temporo-sphenoidal lobe or elsewhere in the brain. "If there is much doubt as to the location of the abscess, temporo-sphenoidal or cerebellar, or possible implication of the sigmoid sinus, the method suggested by Mr. Percy Dean should be followed, and a crown of bone removed, one and one-quarter inches behind and one-quarter inch above the centre of the external meatus, through which all these regions can be explored. . . If there is any mastoid tenderness the antrum should always be opened first, and the surrounding parts carefully examined for any evidence of extension from this cavity."

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## DERMATOLOGY.

UNDER THE CHARGE OF

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**Erythema Induratum of Bazin.**—CH. AUDRY (*Monatshefte für prak. Derm.*, 1898, No. 10) asks the question, What do we know about this malady? and concludes from histological investigations (of one case) that we are not justified in regarding it as belonging to the group of tuberculosis of the skin. Histologically, it consists of a fatty induration, together with an independent and considerable œdema of the connective tissue that shows no signs of inflammation. The author does not think his observations

justify looking upon the disease as a scrofulous manifestation (the usually accepted view). He inclines to the opinion of Hardy, that it is probably nothing more than a chronic, relapsing, and ulcerating form of erythema nodosum.

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**Lichen Scrofulosorum.**—HAUSHALTER (*Annales de Dermatologie et de Syphiligraphie*, 1898, No. 5) reported two cases of lichen scrofulosorum at a séance of the Société Française de Dermatologie et de Syphiligraphie, which presented the following features: In both cases the eruption was present upon the face, as well as upon the trunk and extremities, and followed an attack of measles. The eruption consisted of small, rose-colored papules having an epidermic crust in the centre. Frank suppuration of these lesions was never observed; they gradually disappeared, leaving minute, depressed cicatrices. Inoculations practised upon guinea-pigs with curetted lesions produced tuberculosis.

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**Herpes Zoster.**—WEBER (*New York Medical Record*, July 9, 1898) finds that a dusting-powder composed of equal parts of subgallate of bismuth and talc is a useful application in herpes zoster; where this does not prove effective, an ointment containing one part of subnitrate of bismuth to three parts of cold cream will relieve the burning. For the neuralgia which so often accompanies or follows it, quinine in large doses given two or three times a day, continued to the point of tolerance, is probably the best remedy; iodide of potassium, strychnine, and galvanism may be employed after quinine fails. Careful nursing and management are important adjuncts to the treatment.

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**Some Undescribed Forms of Herpes Tonsurans.**—STERN (*Archiv für Dermatologie und Syphilis*, Band xliv.), in an epidemic of herpes tonsurans in Manheim, observed a considerable number of unusual forms of the disease. In two cases the malady attacked the mucous membrane of the lower lip and the cheek, spreading from the chin. In one case there were large, partly hemorrhagic blebs in the face, accompanied by nodules in the beard and kerion of the temple. In this case there was likewise a marked swelling of the left external ear, which was dark red and moderately painful to the touch. This affection of the ear had existed for six months. Numerous mycelia were found in the pus expressed from a small opening upon the upper edge of the helix. In a case characterized by a squamous and nodular eruption situated upon the nape of the neck, ulcerative destruction of one of the nodules occurred, producing an ulcer 2 cm. in diameter. In the case of a girl aged seventeen years, having numerous scaly plaques scattered over the trunk and extremities, in which fungus was demonstrable, there were numerous more or less elevated nodules situated over the sacrum, on the buttocks, the breasts, abdomen, and upon the anterior and posterior surfaces of the thighs. In a few instances lanugo hairs extracted from these nodules were found to contain fungus.

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**Ringworm as it Appears in Boston.**—C. J. WHITE (*Journal Boston Society Medical Sciences*, May, 1897) gives his conclusions, based upon about

two hundred microscopical examinations and between three and four hundred inoculations. The *microsporon Audouini* occurs in the majority of cases of ringworm of the scalp; in Boston, 95 per cent. of all cases are due to this fungus; in Paris, 60 per cent., and in London from 80 to 90 per cent. This fungus has not been found on the scalp after the age of fourteen years. In France this variety has not been isolated from the beard or from the smooth skin; but in England it has been found in the beard, and in Boston it was encountered three times in the beard and three times on the general surface of the body. Thus, in Boston it is the commonest form of ringworm, causing 56 per cent. of all cases of the affection. It always occurs on the outside of the hair, and consists of innumerable small (about 3 micromillimetres in diameter), round spores arranged like a mosaic, rarely any mycelium.

The *megalaspora* occur both inside and outside the hair, at times the entire shaft being invaded and surrounded, and are from 5 to 7 micromillimetres in diameter. They are not round, but rectangular, and the mycelium is always present. A few drops of ether, followed by 40 per cent. solution of caustic potassa, applied to the hair reveal these fungi.

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**Dermatoses Albuminuricæ.**—MERK (*Archiv für Dermatologie und Syphilis*, Band xliii.) considers, under this title, those affections of the skin which are intimately associated with albuminuria: these are (*a*) a certain kind of eczema; (*b*) pruritus; (*c*) urticaria; (*d*) erythema; (*e*) furunculosis. Albuminuric eczema is a sharply circumscribed, papular, chronic eczema occurring in persons of advanced age, having its most frequent seat on the leg, more rarely on other parts of the body, accompanied by intense itching which resists all therapeutic endeavors for its relief, but which may completely disappear spontaneously with the formation of pigment. Albuminuric pruritus is the most frequent dermatosis accompanying Bright's disease, and is usually universal in its distribution. The course of the kidney affection and the variations in the quantity of albumin contained in the urine are without influence upon the variations in the intensity of the itching. This form of pruritus increases in summer; it is not distinguishable in its external features from other forms of pruritus, such as occur in diabetes, in pregnancy, or from indigestion. Urticaria is associated with albuminuria almost as frequently as pruritus, the former being often the forerunner of the latter. Erythema and erythema-like efflorescences are much less frequent in albuminuria than pruritus and urticaria.

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**The Radical Treatment of Lupus.**—URBAN (*Monatshefte für prak. Derm.*, 1898, No. 9) compares the treatment of lupus to that of cancer, and recommends extirpation of the disease in all cases where this procedure is at all practicable. There exist inoperable cases just as in carcinoma and sarcoma, especially those in which the disease is disseminated and superficial. Transplantation is recommended in suitable cases.

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**On Miliary Tuberculosis of the Skin.**—KAPOSI, of Vienna (*Wiener med. Woch.*, 1897, No. 40), discusses the question of tuberculosis of the skin in its various manifestations, and arrives at the conclusion that "tuberculosis

propria seu miliaris" is a well-defined clinical process, different from lupus and all other forms of the so-called tuberculoses. Though rare, it is commoner than is generally supposed. It occurs in almost all cases together with other manifestations of tuberculosis, chiefly of the respiratory tract. Tuberculosis of the skin occurs very often with the same disease occupying the neighboring mucous membranes. These local forms (of the skin and mucous membrane) do not possess an absolutely unfavorable prognosis, as they may heal spontaneously or be cured by local or general therapeutics.

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**Treatment of Tuberculous Processes with Pyrogallol.**—VEIEL (*Archiv für Dermatologie und Syphilis*, Band xliv.), as the result of considerable experience with this remedy, regards its use, in many cases, preferable to any surgical treatment, the only disadvantage attending this method of treatment being its long duration. The manner of employing it is as follows: The diseased parts are first destroyed by means of a 10 per cent. pyrogallol vaseline, which, spread upon lint, is applied for three to five days. The healing of the wound thus produced is allowed to take place under ½ to 2 per cent. pyrogallol vaseline, which is strong enough to destroy lupus tissue without hindering the formation of sound granulations.

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**Monochloracetic Acid in the Treatment of Xanthoma.**—MCGUIRE (*Journal of Cutaneous and Genito-urinary Diseases*, July, 1898) reports the cure of several cases of xanthoma by applications of monochloracetic acid. These applications were free from pain, but were sometimes followed by considerable swelling, which, however, soon subsided. The acid should be applied to a small surface at a time only. It first turns the lesions white, but in a short time a dark crust appears, which should be allowed to separate spontaneously.

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**Urticaria with Recurrent Hæmatemesis.**—CHITTENDEN (*British Journal of Dermatology*, May, 1898) reports the following case: An unmarried female, aged thirty-three years, suffered from attacks of urticaria which, at first, differed in no respect from the usual type; but later these grew more severe, being accompanied by swelling of the lips, tongue, and nasal mucous membrane, and dyspnœa, lasting three or four hours. These attacks usually lasted about a week. Some three or four months after the beginning of the attacks the patient was seized one morning with severe nausea, and vomited large quantities of blood; this was followed by immediate relief, and the urticaria disappeared within a day or two. Two months later there was a similar attack, the hæmatemesis being followed as before by the rapid disappearance of the eruption. In subsequent attacks, which were much milder, there was no hæmatemesis, but melæna was present. In the way of treatment, change of air, with absolute rest and freedom from worry, seemed to give the best results.

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**Lactophosphate of Lime in Acne and Furunculus.**—H. S. PURDON (*Dublin Journal of Medical Sciences*, February, 1898) refers to the researches of Dusart on this drug, and states that he has derived benefit from its use when given in certain forms of acne, especially when large or hypertrophied,

and also in boils. In cases of the latter, combined with iron, it is more useful, while a favorable and palatable recipe, where cod-liver oil is thought to be required, is the following: Take of gum arabic, ℥x; water, ℥j; syrup of lactophosphate of lime, ℥iij; cod-liver oil, ℥iv; essence of bitter almond, ♏iij. Phosphate of lime is not merely a drug "able to harden bones," but becomes an active agent in nutrition. In acne and similar diseases due to nutritive debility, it is often distinctly valuable—often more so than calcium sulphide.

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**A New Human Parasite of the Sarcoptic Tribe.**—RUDOLPH MENGER, of San Antonio, Texas (*Journal of Cutaneous and Genito-urinary Diseases*, September, 1897), gives the following history of a case: Eight months before, the patient, an aged man, residing in Texas, became affected here and there with small, fiery-red papules, which at times under treatment seemed to get well, but at other times under local remedies to reappear. There was no itching, but at times slight burning. "The animalculæ, it seems, on maturing, emerge from the skin;" . . . "various remedies cause many of all sizes to come to the surface, some bore under the skin again, and, although I have picked off thousands, I have never seen one move. One of the annoyances to the patient is their crawling on the skin. Their bite is much like that of a flea or a chinch, and often so rapidly is it done that the mite will bore in before you can pick it off with the point of a knife. The bites and pimples never suppurate nor exude serum." The case was studied for eight months by several physicians, including Drs. Flemming, Bœcking, and Allen J. Smith, the latter believing that the parasite corresponded with the genus *chorioptes*, species *ecaudatus*. Scabies and pediculosis were excluded. Illustrations accompany the article.

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## OBSTETRICS.

UNDER THE CHARGE OF

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**The Intra-uterine Use of the Colpeurynter.**—KLEINHAUS (*Monatsschrift für Geburtshülfe und Gynäkologie*, 1898, Band vii., Heft 2) reports a series of seven cases where it was imperative to end labor rapidly, in which good results were obtained by placing the colpeurynter in the uterus, and thus securing prompt delivery. He considers this method useful in eclampsia when dilatation has already commenced. Where there are pathological changes in the uterus the use of elastic bags is not advisable, for labor pains may become weaker instead of stronger under their use. In abortion, where

it is necessary to dilate the uterus, solid dilators are better. Bags made of inelastic material are most efficient.

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**The Etiology of Hydramnios.**—OPITZ (*Centralblatt für Gynäkologie*, 1898, No. 21) has been impressed by the familiar fact that the fœtus is usually dropsical in cases of polyhydramnios. He found by experiment that normal amniotic liquid contains no substance which increases the production of lymph or irritates the excretory organs.

On the contrary, in hydramnios the amniotic liquid when injected into animals at once increases the formation of lymph, and greatly irritates the kidneys. As the fœtus evidently swallows amniotic liquid, there is set up a vicious circle by which irritating material is kept in constant circulation in the blood of mother and child.

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**Appendicitis Complicating Pregnancy.**—In the *Annales de Gynécologie*, 1898, vol. xlix., PINARD reports the case of a woman, aged twenty-five years, and six months pregnant. A typical attack of appendicitis occurred, and on the fourth day operation was performed for swollen belly, feeble pulse, and evident sepsis. On incising the abdomen pus escaped; a second incision was made in the left lower quadrant, and a similar condition found. Abortion occurred that night, followed by death of mother and fœtus. On making cultures from the umbilical cord, the colon bacillus was found in abundance, having evidently escaped through the ruptured appendix.

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**Ophthalmia in the Newly-born.**—In the *Medical Press and Circular*, 1898, Nos. 21 and 22, STEPHENSON contributes an excellent practical account of this disorder and its treatment.

He draws attention to pre-natal infection, and in most cases thinks infection occurs soon after birth by opening or rubbing the child's eyes. Gonococci are the cause in two-thirds of all cases. He urges thorough examination under ether, if needed. While gonococci are usually found, other germs may be present.

He advises nitrate of silver, 10 grains to 1 ounce distilled water, twice daily; applied by brush, of cotton, on German silver rod. It is unnecessary to remove excess with salt solution. Antiseptic solutions should be applied twice daily, not with syringe, but with cotton. To prevent adhesions of lids an antiseptic ointment should be used. Unna's is a good one: 3 per cent. hydrogen peroxide, with lanolin and vaseline. He considers complicated apparatus for treatment unnecessary.

On an average, 10 per cent. of children so affected lose one or both eyes. If the cornea is clear when the child is first submitted to treatment, the prognosis is good.

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**Partial Occlusion of the Pelvic Brim by the Soft Parts.**—In the *British Medical Journal*, 1898, No. 1954, WILLIAM C. LUSK contributes a very interesting description of frozen sections of a woman who died in the first stage of labor. Among other interesting details which the study of these sections affords, the practical point is brought out that the pelvic brim in this patient was so lessened by the soft parts that a normal bony pelvis was

changed into a justo-minor pelvis. The narrowing of the brim from this cause was in the transverse diameter nine-tenths of an inch on each side; in each oblique diameter one inch behind and six-tenths of an inch in front.

[This affords a rational explanation of tedious labor so often observed in stout women.—ED.]

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**An Unusual Mechanism of Labor Complicated by Myoma of the Womb.**—In the *Münchener medicinische Wochenschrift*, 1898, No. 20, FALK reports the case of a multipara, aged thirty-six years, who had had five spontaneous labors. In her present labor pains were accompanied by free bleeding. On examination a hard tumor was found in the posterior cul-de-sac. The membranes were immediately ruptured, when the feet presented and the border of the placenta could be felt just above. As bleeding continued, the feet were brought down and the child delivered. The placenta was found partly separated, and easily removed. The patient made an uninterrupted recovery.

Examination a few months after showed the tumor to be a myoma as large as a man's fist. The placenta had been partly separated early in labor, and the child doubled upon itself, the feet descending. Operation for the removal of the tumor was declined.

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**Neglected Shoulder Presentation Complicated by Rupture of the Uterus, with Recovery.**—In the Clinical Report of the Rotunda Hospital (*Dublin Journal of Medical Science*, June, 1898) is reported the case of a multipara who received a severe kick in the lower abdomen. Tedious and neglected labor followed, with shoulder presentation and protrusion of the fœtal hand.

On examination the child was found dead, the uterus ruptured and tightly contracted. Delivery was accomplished by decapitation. The rent in the uterine wall was three inches in length, in the lower segment to the right and posterior. A thick plug of iodoform gauze was passed through the rent, a hypodermatic of ergotin was given, and the patient removed to the hospital, where she received aseptic care. The gauze was removed in twenty-four hours. The patient made an uncomplicated recovery.

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**Seventy-four Years' Experience in the Induction of Labor.**—An interesting account of a long and valuable experience is given by MOIR, Consultant to the Royal Maternity Hospital, Edinburgh (*Scottish Medical and Surgical Journal*, 1898, vol. ii., No. 6).

In direct contrast to the forced, rapid labor of the French, he has practised the gradual dilatation of the cervix, never attempting delivery until the cervix was thoroughly softened. He strongly deprecates haste in these cases, and urges patience and very gradual delivery.

His method consisted in allowing a few ounces of the amniotic liquid to escape through a male silver catheter, which was gently inserted between the uterus and membranes for several inches. The point of the catheter had been cut off, and the stylet was gently pushed through the membranes. He occasionally followed this by the use of tents or of a small Barnes' bag. He dilated the cervix with a steel rectal bougie which was introduced daily

for several days, the fingers and instrument passing about the cervix to gradually loosen the membranes. He did not attempt delivery until the parts were thoroughly softened, when he completed dilatation with the fingers and delivered often by version. He usually induced labor at the end of the seventh month, and allowed a week for the induction of labor.

He operated on twenty-six patients, who gave birth to seventy-two children, of whom thirteen were stillborn. On one patient labor was induced eight times. He lost two mothers from puerperal septic infection.

[While we acknowledge the value of caution in delaying delivery until the parts are softened, we cannot consider these results as especially good. Fœtal mortality is very high in this series of cases, and the author's methods call for more frequent manipulation and interference with the uterus than is desirable.—ED.]

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**Intra-uterine Typhoid.**—In the *Scottish Medical and Surgical Journal*, 1898, vol. iii., No. 1, FORDYCE reports a very interesting case in which typhoid was demonstrated in a five-months' fœtus. The mother aborted and died soon after. No autopsy could be obtained, but there was no doubt about the diagnosis.

Externally and internally nothing abnormal could be seen by the naked eye in the fœtus or its appendages. There was a small quantity of serous fluid in the abdomen. The intestines seemed quite healthy; the liver and spleen were not enlarged. Tubes inoculated from the kidney, spleen, and intestinal contents gave pure cultures of the typhoid bacillus; the blood was sterile. Care was taken to make tests, which showed the absence of the bacillus coli communis. It was impossible to demonstrate bacilli in the tissues by microscopic examination. The Widal test was very successful in this case.

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**Osteomalacia and Its Treatment.**—In the *Monatsschrift für Geburtshülfe und Gynäkologie*, 1898, Band viii., Heft 1, STIEDA reports several cases of osteomalacia in which he minutely studied and described the changes occurring in the muscles. He draws especial attention to the paralyses present, and brings out the interesting fact that osteomalacia may occur without lesions of the bones which are readily apparent.

In regard to treatment, non-pregnant cases do well with the administration of phosphorus and the use of saline baths. If a faithful trial of these measures is without result, removal of the ovaries is indicated. Pregnant cases often do well with the bath and phosphorus treatment. When important changes in the pelvis are threatened, pregnancy should be interrupted. Should Cæsarean operation be done, the uterus, tubes, and ovaries should be removed.

FEWSON (*Monatsschrift für Geburtshülfe und Gynäkologie*, 1898, Band viii., Heft 1) concludes from his experience in the treatment of osteomalacia that castration is the surer method of treatment when no complications are present which forbid operation. The phosphorus treatment is often of service, especially in patients too old to bear operation well.

Operators must bear in mind the fact that the abdominal walls are often so stretched and altered in these cases that bad union follows abdominal

section. This results from the overdistention caused by the spinal deformity, which throws the viscera forward against the muscles of the abdomen, from the cough which is often present, and from the badly nourished condition of these women. The abdominal wall must be closed in layers, and every precaution taken to secure good union.

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**Rupture of the Uterus by a Bougie; Abdominal Section; Recovery.**—GUÉRARD (*Centralblatt für Gynäkologie*, 1898, No. 27) reports the case of a woman, aged twenty-seven years, who had a swollen abdomen and was supposed to be pregnant. Pains began, but as progress did not follow, the attending physician introduced a bougie to induce active labor. When called in consultation, Guérard found by careful examination that the uterus was empty, but that a condition was present which was not clear, and justified section.

On opening the abdomen ascites was found, and a large quantity of fluid escaped. Tubercular pelvic peritonitis was present, and the uterus had been ruptured on its left side by the bougie. The edges of the rent were trimmed and united with catgut. The patient recovered without complications.

---

**Rupture of the Uterus; Abdominal Section; Recovery.**—ORTHMANN (*Monatsschrift für Geburtshülfe und Gynäkologie*, 1898, Band vii., Heft 4) reports the case of a multipara who aborted spontaneously between the third and fourth months. The fœtus escaped; the appendages remained. On examination rupture of the uterus on the right side was found, while the membranes had escaped through the rent.

On opening the abdomen blood-clots were found between the layers of the right broad ligament. The fœtal appendages were not readily removed, and an incision was made through the peritoneal covering of the broad ligament, when clots and appendages were readily evacuated. The broad ligament and uterus were carefully closed with continuous catgut suture, the womb thoroughly cleansed, and the vagina and external parts thoroughly disinfected. The patient made a good recovery.

In this case an attempt had undoubtedly been made to induce abortion by a sound, which had caused the rupture.

Orthmann completes his paper with an interesting account of a neglected labor with shoulder presentation in which spontaneous rupture of the womb occurred. Although operation was performed, the patient died of septic peritonitis.

---

**Superfœtation in the Human Race.**—In the *Chicago Medical Recorder*, July, 1898, HERZOG describes three cases of abortion from which he carefully studied the specimens. In each two ova were expelled, and no doubt existed regarding the varying periods of gestation and that superfœtation had occurred. Microscopic examination of the specimens completes a remarkably clear demonstration of superfœtation.

---

**Contracted Pelvis; Sapræmic Infection; Cæsarean Section; Recovery.**—A remarkable recovery from puerperal sapræmia and Cæsarean section is

reported by REYINGA (*Nederl. Tijdschr. v. Geneeskunde*, 1898, No. 1). When operation was performed the patient had albuminuria, fever, and foul discharge; the child was living. The fundus was opened by transverse incision and the child delivered alive. As the uterine cavity had a foul odor, it was filled with iodoform gauze, the womb closed with catgut, and the vagina cleansed with lysol douches. Although fever persisted, recovery finally ensued.

---

**A New Method of Influencing the Sex of the Fœtus.**—The much-discussed theory of SCHENK, of Vienna, has found publication (*Magdeburg, Schallehn und Wollbrück*, 1898).

Briefly stated, the author believes that regulation of the mother's diet for the first four months can produce male offspring. Perfect nutrition in the mother favors the production of males. When an excess of unassimilated matter is present in the body, sugar appears in the urine. Accordingly, frequent examination for sugar should be made, and diet and hygiene varied accordingly. The book contains a discussion of older theories, among which the cross-production of sex receives partial acceptance.

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**Gunshot-wound of the Uterus and Child; Cæsarean Section; Recovery.**—In *Medycyna*, 1898, No. 14, WRZESNIOWSKI reports the case of a multipara eight months pregnant, who received a wound in the abdomen from a pistol loaded with slugs. Fœtal movement ceased at once.

On abdominal section a ragged wound was found on the anterior surface of the uterus. Amniotic liquid was in Douglas' cul-de-sac. The intestines were uninjured. The womb was incised, the child and appendages extracted; no wound was found on the posterior uterine wall. The edges of the shot wound were trimmed and the uterus closed, a gauze drain placed behind the womb.

The fœtus had a number of wounds in the lungs and heart, and had been instantly killed.

The mother made a tedious recovery, complicated by prolonged fever.

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**Incision of the Fundus in Cæsarean Section.**—Among the many reports of successful operations by this method, RIEDINGER, of the Brunn clinic, publishes the following (*Centralblatt für Gynäkologie*, 1898, No. 29):

He reports four operations. In one the upper half of the uterus was adherent to the peritoneum, which had undergone a chronic degenerative change. After recovery the adhesions recurred, and the uterus remained high in the abdomen.

In another case the membranes were adherent, and in removing them the right cornu of the uterus was torn, the bleeding ceasing readily on digital compression and catgut suture.

His operations were successful, and add to the accumulating evidence in favor of this method.

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**The Pathology of Osteomalacia.**—In the *Annales de Gynécologie*, July, 1898, LABUSQUIÈRE publishes an extended inquiry into the changes in the ovaries present in osteomalacia. He can find no direct connection between the condition of the ovaries and the disease, and regards osteomalacia as a profound tropho-neurosis.

# GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,

OF NEW YORK.

**Ligation of the Uterine Arteries in the Treatment of Fibromyoma.**—GOTTSCHALK (*Annales de Gynécologie et d'Obstétrique*, 1898, No. 5) reports sixteen cases of fibromyoma in which he ligated the uterine arteries. In seven the tumors totally disappeared, while in fourteen they diminished in size. In selecting cases for operation the most important point to be noted is the site of the neoplasm. Interstitial tumors located in the lower or middle segment of the uterus are more apt to be favorably influenced than are intra-ligamentous growths and those situated at the fundus.

The patient's age is important; the most favorable results are obtained in women near the climacteric. Rapidly-growing tumors and those with general vascular adhesions, especially omental, are not apt to diminish in size after ligation of the uterine arteries.

Obstinate hemorrhage is the chief indication for the operation, but before proceeding with the ligation it is always advisable to explore the uterine cavity in order to discover and remove any submucous polypi which may be the direct cause of the bleeding.

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**Primary Carcinoma of the Fallopian Tube.**—JACOBSON (*Ibid.*) reports the case of a woman, aged forty-five years, who had passed the climacteric a year before, and complained of colicky pains in the abdomen, watery discharges from the vagina, and decline in health. The uterus was small; in the cul-de-sac on the left side was an elastic tumor the size of an egg. It was enucleated by posterior section, and proved to be a soft, brain-like mass, which broke down readily. It was a portion of the tube sections of the lining membrane of which showed numerous epithelial ingrowths and alveoli filled with epithelial cells.

---

**Cyst of the Round Ligament.**—OULESKO-STRONGANOVA (*Ibid.*) describes a cyst removed from the round ligament near its uterine origin. It was as large as the fist, thin-walled, translucent, and was covered with dilated veins. Its wall was composed of muscular and connective tissue, with an inner lining of cylindrical epithelium, some of the cells being ciliated. In some places papillary outgrowths were seen; in others the epithelium was entirely absent. The writer believed that the presence of the ciliated cells proved that the cyst was developed from the remains of the Wolffian body.

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**Abdominal Tumor Complicated with Gall-bladder Adhesions.**—FREUND (*Deutsche med. Wochenschrift*, 1898, No. 18) reports the following cases:

Case I.—In removing a large ovarian cyst from a patient, aged fifty-eight years, the writer encountered numerous visceral adhesions. After separating these, a firm attachment was found beneath the liver to a nodule which was

at first thought to be malignant, but was later found to be the gall-bladder distended with calculi. After removal of the cyst the abdominal incision was enlarged, the cystic duct was ligated, and the gall-bladder was excised. The patient made a good recovery.

Case II.—In this case a maiden lady, aged sixty-five years, had long suffered from a uterine fibroid. There were general vascular adhesions, which were especially firm in the neighborhood of the gall-bladder. The patient being a bleeder, it was necessary to tie each vessel separately. Hysterectomy was performed, and the patient survived for several weeks, dying of renal trouble.

---

**Oophorectomy in Inoperable Cancer of the Breast.**—CHEYNE (*British Medical Journal*, May 7, 1898) reports two cases in which he removed the ovaries under the conditions recommended by Beatson.

Case I.—The patient, aged thirty-four years, had a recurrence, with ulceration, after removal of the right breast and secondary excision of diseased axillary glands. The presence of extensive involvement of the glands of the neck made further operative interference unjustifiable. No evidence of visceral involvement. She consented to have the ovaries removed, which was done October 28, 1896, and she was kept under observation in the hospital for two months after the operation, when she was discharged in good health, with the ulcer nearly healed and the glands much smaller. Four and a half months after operation the ulcer was quite small, the surrounding skin-infiltration had mostly disappeared, a large, hard mass in the axilla was smaller and softer, and many of the glands in the neck could no longer be felt. Three months later her general, as well as local, condition was much worse, pleurisy developed, and the disease was progressing rapidly to a fatal termination.

Case II.—The patient, aged thirty-three years, when admitted to the hospital was very weak, having a rapidly-growing tumor of the left breast, with general glandular involvement. She had never had an operation, and was beyond help from surgery. With her consent, oöphorectomy was performed, and she was discharged four weeks later, apparently somewhat improved, some of the growths being smaller and softer. She was kept under observation, but grew steadily worse and died with metastases in the liver and pleura five months after the operation. In both cases thyroid tablets were given for three or four months.

In discussing these cases, which the writer regarded as typical ones for the operation (like Boyd's and Beatson's), attention is called to the fact that in the second the result was entirely negative, while in the first, though the improvement at first was marked, after six months the patient grew rapidly worse. Cheyne believes that there is a direct relation between the ovaries and the cancerous, as well as the normal, epithelium of the breast, but that the effect of oöphorectomy is temporary. It would, perhaps, be better to remove as much of the disease as possible at the same time with the ovaries.

---

**Remote Results of Vaginal Hysterectomy for Fibromyoma.**—BUSCHBECK (*Archiv für Gynäkologie*, Band lvi., Heft 1) reports one hundred cases (four deaths) in which the condition of the patient was known from one to

ten years after operation. Seventy-two per cent. were seen and examined. Sixty-five women were entirely cured and were able to perform their usual duties. Persistent nervous phenomena were few.

Many of the patients were greatly reduced from loss of blood before the operation, but were enabled to go through it safely by the use of subcutaneous injections of saline solutions.

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**Results of Vaginal Hysterectomy for Diseased Adnexa.**—BUSCHBECK (*Ibid.*) reports sixty seven cases, with a single death; 89.5 per cent. of the women who were subsequently examined (forty-eight in all) were well and able to work. There were no fistulæ or exudates remaining. Few persistent post-climacteric phenomena were noted, though during the first few months following the operation there were usually slight menstrual disturbances, which gradually disappeared.

The writer believes that in nervous and hysterical patients removal of the diseased adnexa offers no prospect of an improvement of the neurasthenic condition.

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**Results of Curettement.**—ALBERT (*Inaugural Thesis;* abstract in *Centralblatt für Gynäkologie*, 1898, No. 24) reports 163 cases of curettement for endometritis, in 74 per cent. of which a permanent cure was obtained; 3.1 per cent. were improved; 9.2 per cent. were no better after the operation. He recommends the application of liq. ferri sesquichlor. or tincture of iodine after curettement, practically in all cases, whether of menorrhagia or metrorrhagia.

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**Metrorrhagia in Children.**—VETERE (*Arch. di Ostet. e Ginecolog.*, 1897, No. 10), while believing that most cases of so-called precocious menstruation are to be regarded as physiological, instances the following as an example of a pathological condition: An infant, aged seventeen months, had a slight vaginal hemorrhage which recurred four months later, and did not return for six years, when it began to appear at intervals of from two to three weeks, continuing for five or six days. As general treatment (electricity, hydrotherapy, ergot, etc.) was useless, a vaginal examination was made under anæsthesia when the patient was nine years old. The cervix uteri was found to be much hypertrophied and bled easily when touched. It was amputated, and the patient was promptly cured. The writer infers that the hypertrophy was the result of a virginal metritis, due to cold, masturbation, or some other exciting cause. The direct source of the bleeding was the granular condition of the cervical endometrium.

---

**Pelvic Abscess of Appendicular Origin.**—MONOD and VANVERTS (*Archives Gén. de Médecine*, May, 1898) conclude an interesting article on this subject as follows: A pelvic appendicular may accompany a peri-appendicular abscess situated in the iliac fossa, or it may exist alone and be entirely intrapelvic. In the former case the classical incision in the loin should be made; if it is feared that drainage will be imperfect, a counter-opening may be made in the vagina at once, though it will usually be done later. If the appendical abscess is intrapelvic, a vaginal incision should be made when practicable; the abscess should never be punctured through the rectum unless spontaneous rupture into this canal is imminent. In male subjects and little

girls the abdominal incision alone is possible, the precaution being taken to peel off the peritoneum down to the level of the superior strait before opening the abscess. A counter-opening might be made in the ischio-rectal fossa, as suggested by Pollosson.

## HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF

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AND

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**Fluoride of Sodium as a Food Preservative.**—In order to determine the preservative power of fluoride of sodium and to ascertain whether when used with food it can cause injurious effects, DR. PERRET, of the Sorbonne (*Annales d'Hygiène Publique et de Médecine Légale*, June, 1898, p. 497), undertook a series of experiments, using himself and a number of dogs as subjects. He first ascertained that the agent has a very decided influence in inhibiting the development of the lactic and butyric ferments. Milk containing 0.30 per cent. of it and kept at 38° C. remained unchanged long after the controls had become coagulated. In a second experiment a dozen tubes of preserved milk planted with the butyric ferment, and a dozen of normal milk similarly treated, were kept at a temperature of 38° C. side by side. At the end of three hours two of the latter were coagulated, and on the following day the other ten were in the same condition, while all the preserved specimens remained fluid. He next fed a dog weighing 15 kilos 10 grammes of butter, containing 0.5 per cent. of the salt, daily for twenty-nine days. The animal ate well, suffered no ill effects, and gained two kilos. in weight. Another smaller dog received repeated doses, two days apart, of 100 grammes of a saturated solution of the salt, without any other effects than salivation and diuresis. Subcutaneous injections of the salt to the extent of 0.08 gramme for each kilo. of body weight gave similar results; but larger ones, 0.01 per kilo., caused marked salivation, diuresis, and thirst, and refusal of food, and the animal did not return to his normal condition for two days. Intravenous injections, however, gave more positive results. Given to the extent of 0.10 per kilo. in this way, the salt caused immediate rise of pulse and respiration, followed by abundant salivation, nausea, and convulsions, and death in thirty-five minutes. A dose of 0.08 per kilo. gave the same results, but smaller doses than this were followed by recovery. Perret himself ate without apparent ill effects preserved butter as such and used in cooking every day for some time. His conclusions are that the salt is not poisonous when taken into the stomach, and hence may be used without danger as a food preservative.

[His own experiments suggest that before accepting his conclusions it would be wiser to extend the research.—C. H.]

**Typhoid Fever and Infected Ice.**—An outbreak of typhoid fever among the junior officers of a French regiment stationed at Rennes is attributed by DR. DORANGE (*Revue d'Hygiène*, April, 1898) to the use of ice obtained from the Vilaine at a point below the town, where the water was extensively polluted by the sewage of a large district in which there had been a number of cases of typhoid fever. All the regimental officers had been present at a dinner where, the food being the same for all, the beverages consumed differed in this respect, that the captains and other superior officers drank only beer, while the lieutenants, who were in a room by themselves, drank champagne-cup. It was only among the latter that the cases, eight in number, appeared. It was discovered that the ice used in making the cup came from the source above mentioned.

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**New Constituents of the Atmosphere.**—Since the discovery of argon by Lord Rayleigh, Ramsay and Travers have discovered another gas, krypton, in liquefied air after getting rid of the nitrogen and oxygen. This has been followed by the announcement, on June 29th, by Professor Ramsay that he has discovered two more, which he has named neon and metargon (*La Nature*, July 9, 1898). Still another has now been detected by PROF. NASINI (*The Engineering and Mining Journal*, August 13, 1898), who has been working with Anderlini and Salvadori on the gases emanating from the earth in various places in Italy. He has succeeded in proving the existence of, but has not as yet isolated, the supposed element coronium, which has never before been observed in any terrestrial products, and has been known only from a line in the spectrum of the sun's corona. He predicts the discovery of still other elements in the gases under observation.

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**Industrial Hygiene—Matchworkers.**—According to a report by DR. THOMAS OLIVER to the Home Office on the French match works, quoted by *The Lancet*, August 6, 1898, the prevalence of phosphorus-poisoning among the operatives has been greatly reduced since the investigation of the subject by the commission appointed by the government for that purpose in 1896. Rules have been adopted for the protection of the health of the workers, and in order that they may not escape notice they are read aloud on the first Saturday of each month to those whom they are intended to benefit. These rules provide that no food or drink shall be brought into the workrooms; that before meals the operatives shall remove their working clothes, wash their hands with soft soap, and gargle their throats with a preparation provided for the purpose; that no person under sixteen years of age shall be employed; and that all applicants for work must pass a medical examination showing that they have no bodily infirmity or contagious disease, that they have been vaccinated or have had smallpox, and that they have good teeth. As a result of the care taken there has not been a single case of phosphorus-poisoning during the year ended December 1, 1897, among the 575 men and women at the Pantin and Aubervilliers works. On the first appearance of symptoms of illness the worker is suspended, and while absent is given two-thirds pay. The report goes on to say that the French Government is endeavoring in every way to encourage invention and improvements tending to minimize the dangers of this occupation. Apropos of this comes

an announcement in *Le Progrès Médical*, June 25, 1898, that among the results of the stand of the government on this matter are a preparation invented for match heads which contains no white phosphorus or other noxious substance, and a new match-machine, which will still further reduce the dangers of manufacture. Only a few details to perfect the machine remain to be completed before its introduction into the works.

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**Disinfection by Formaldehyde.**—Dr. A. Schlossmann (*Berliner klinische Wochenschrift*, June 20, 1898) recommends for house disinfection a mixture of formalin and glycerin which, when volatilized by means of a special form of apparatus, makes a mist which, being heavier than the air, settles downward and carries mechanically all the organisms of the air with it. He finds that disinfection is complete and that the agent has great penetrating power.

[The results of most experimenters have demonstrated very conclusively that under the most favorable conditions as to temperature and moisture formaldehyde does not possess great penetrating power. How this power can be conferred upon it by the admixture of glycerin would be very difficult to explain. Certainly this quality cannot be derived from the special apparatus. —C. H.]

The results of experiments by Dr. Symanski (*Zeitschrift f. Hygiene und Infectionskrankheiten*, August 19, 1898) are in accord with those obtained by most investigators of this subject. He finds that the agent has no penetrating power, that it acts best in dry air with high temperatures, that it exerts no injurious action on furniture and other objects disinfected, and that it is the most expensive of all processes. He failed, where others have repeatedly succeeded, in destroying spores, and got less favorable results with paraform than with formalin from an autoclave.

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